Master your camera and lens for superb pictures every time

THE ULTIMATE GUIDE TO ADVANCED CAMERA SKILLS

More than 500 expert tips

Learn how to control exposure

Choosing the perfect lens

How to master light

Expert tips for perfect sharpness

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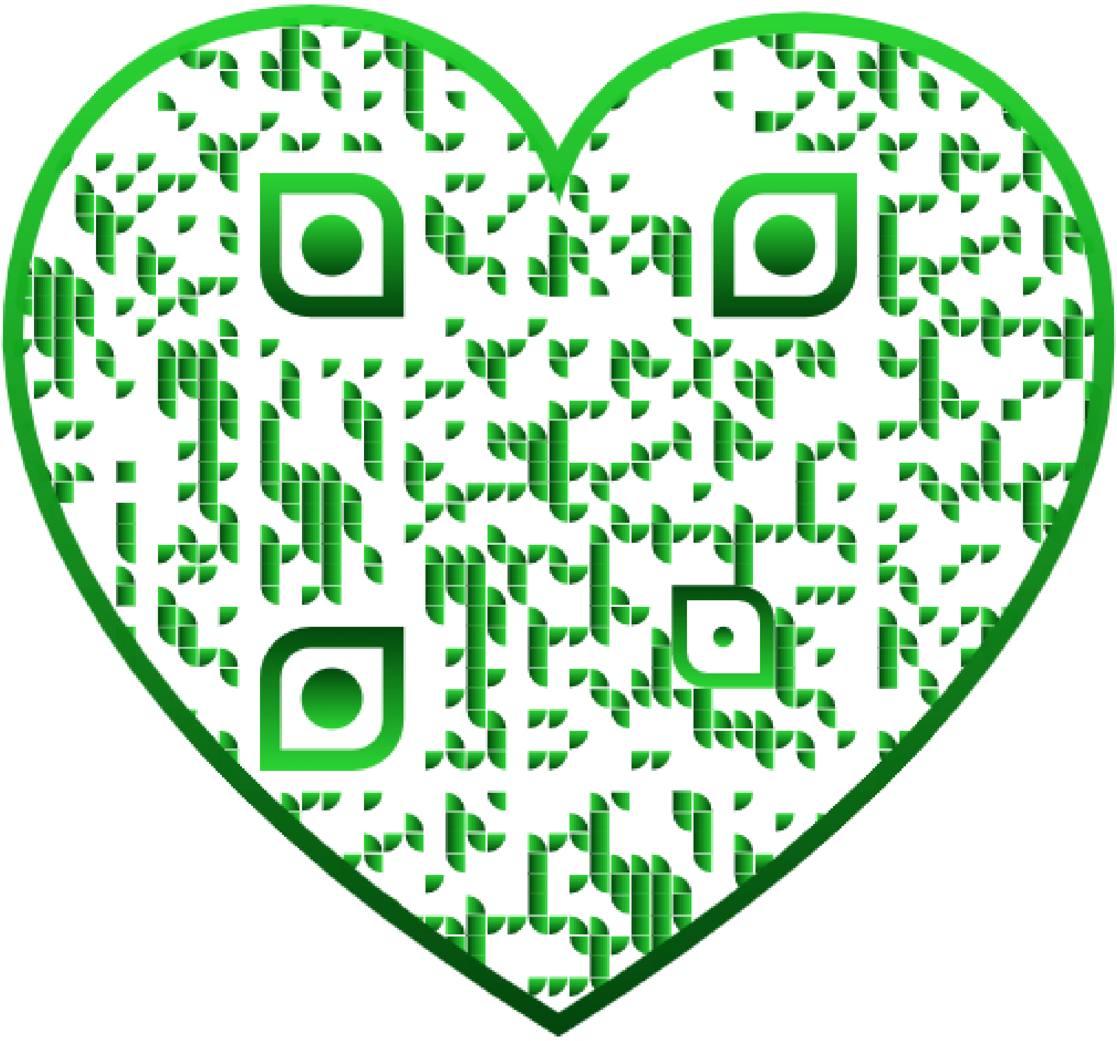
Raw vs JPEG ● Pro composition tips ● Image editing secrets



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Welcome

The beauty of photography is that you never stop learning, so this packed guide is dedicated to helping you raise your camera and image-capture skills without bogging you down in technical jargon. Over the next 132 pages you will find everything that you need to push your photographic prowess to the next level, from ensuring more accurate exposures and capturing more creative compositions, through to more advanced lighting skills.

With easy-to-follow, lavishly illustrated guides, you will find that all bases are covered, whether you want to deepen your understanding of histograms, set the correct white balance for a wide range of shooting conditions, or really get to grips with manual exposure and focusing. There is some really useful hardware advice, too, in order to ensure you are using the right glass for your needs. ‘Spend it on the lens,’ goes the old adage, and it’s still very true.

This *Ultimate Guide* book also reflects the many recent technological changes that have made digital photography easier than ever before – making use of the amazing high ISO capabilities of today’s cameras, for instance, and how this can help with low-light shots. This said, a lot of classic advice for better exposures and composition still applies, so you will find this book ideal if you want to move beyond ‘auto everything’ and take back control of your camera. Just about every celebrated photographer we’ve spoken to insists that mastering your camera is an essential skill, as it ensures that you nail that fleeting magical moment as it unfolds, rather than fumbling about with settings. This special guide will definitely help you to master your camera, and I really hope that you find it useful and inspirational. **Nigel Atherton, Editor**

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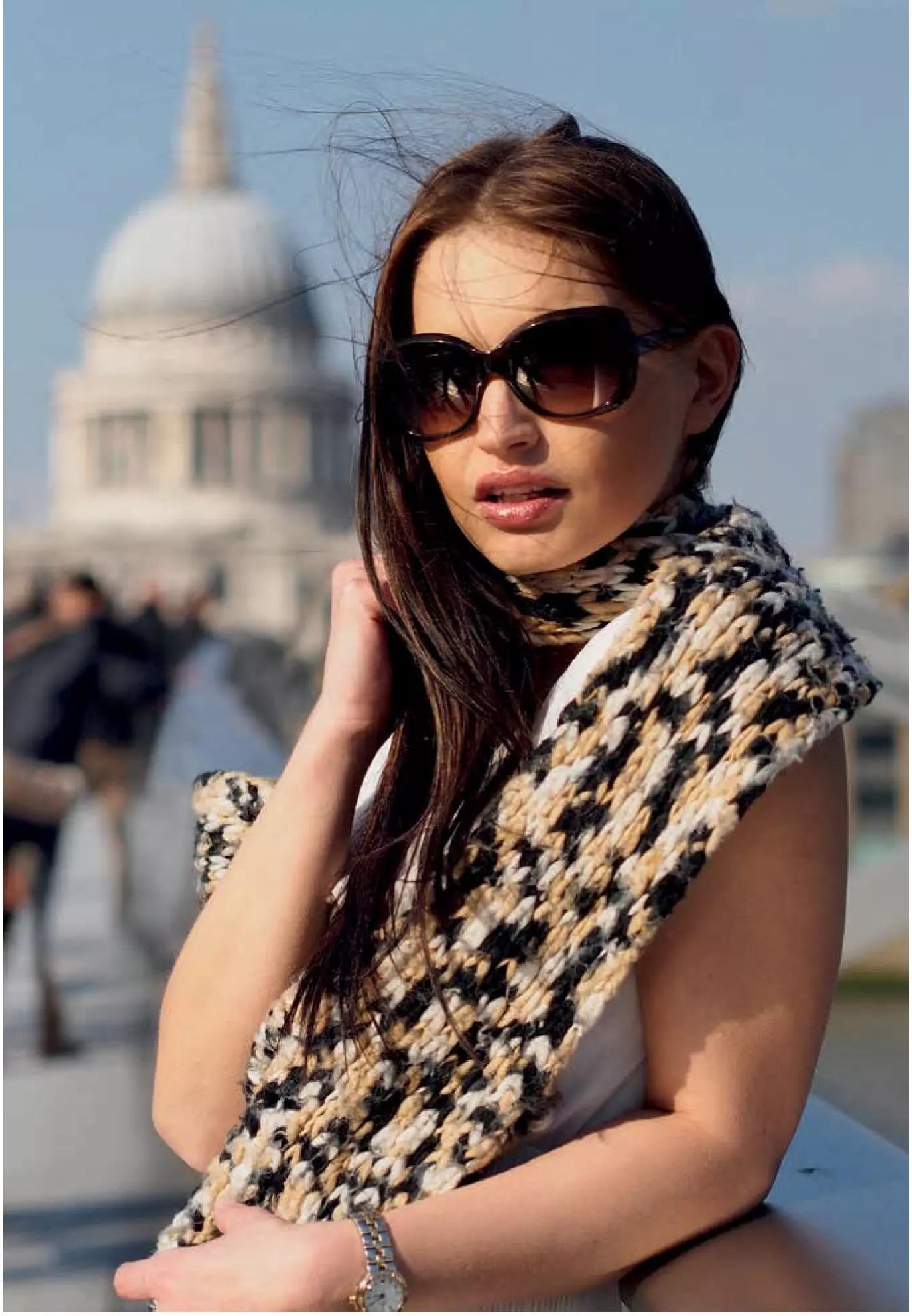
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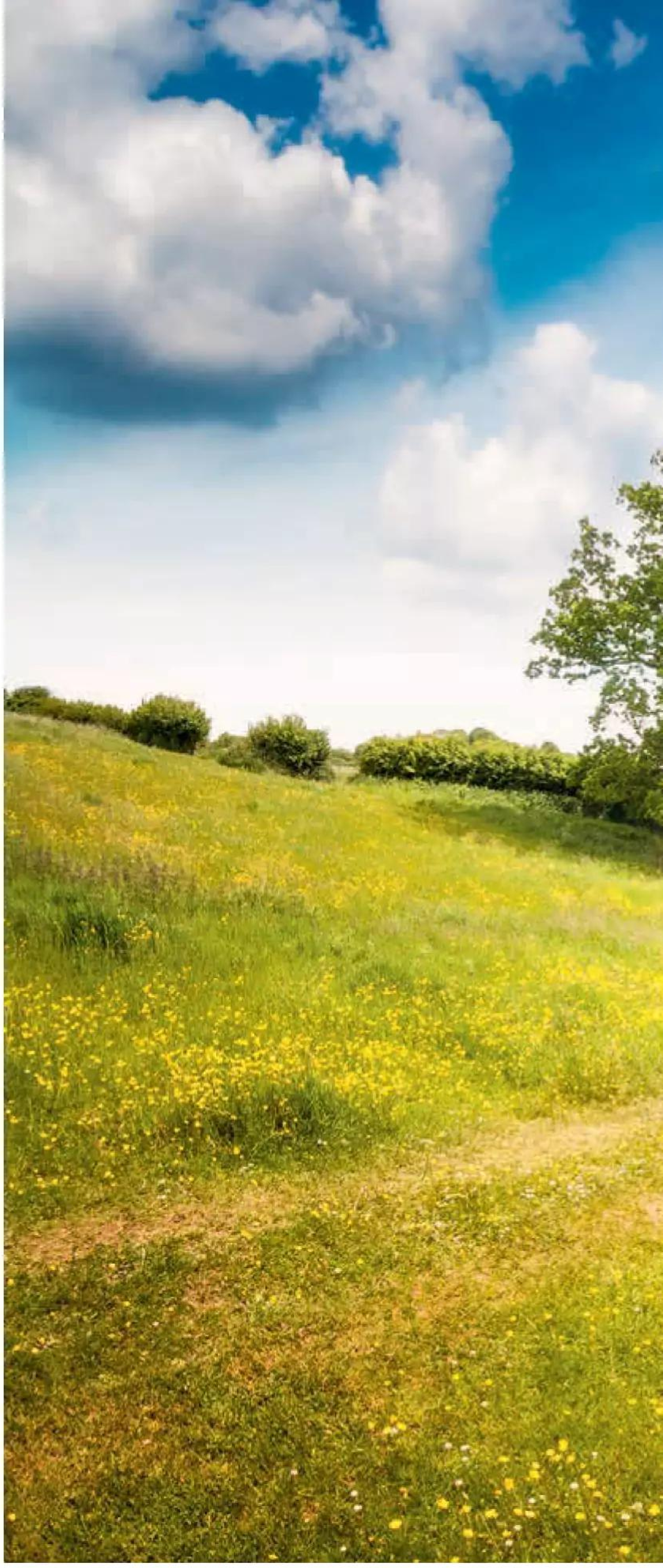
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Hone your camera skills

Kingsley Singleton speaks to three pro photographers about how they handle aperture, shutter speed and ISO to achieve the best results

Aperture

Pro sports and portrait photographer Terry Donnelly opens up about aperture, exposure and depth of field

Terry Donnelly

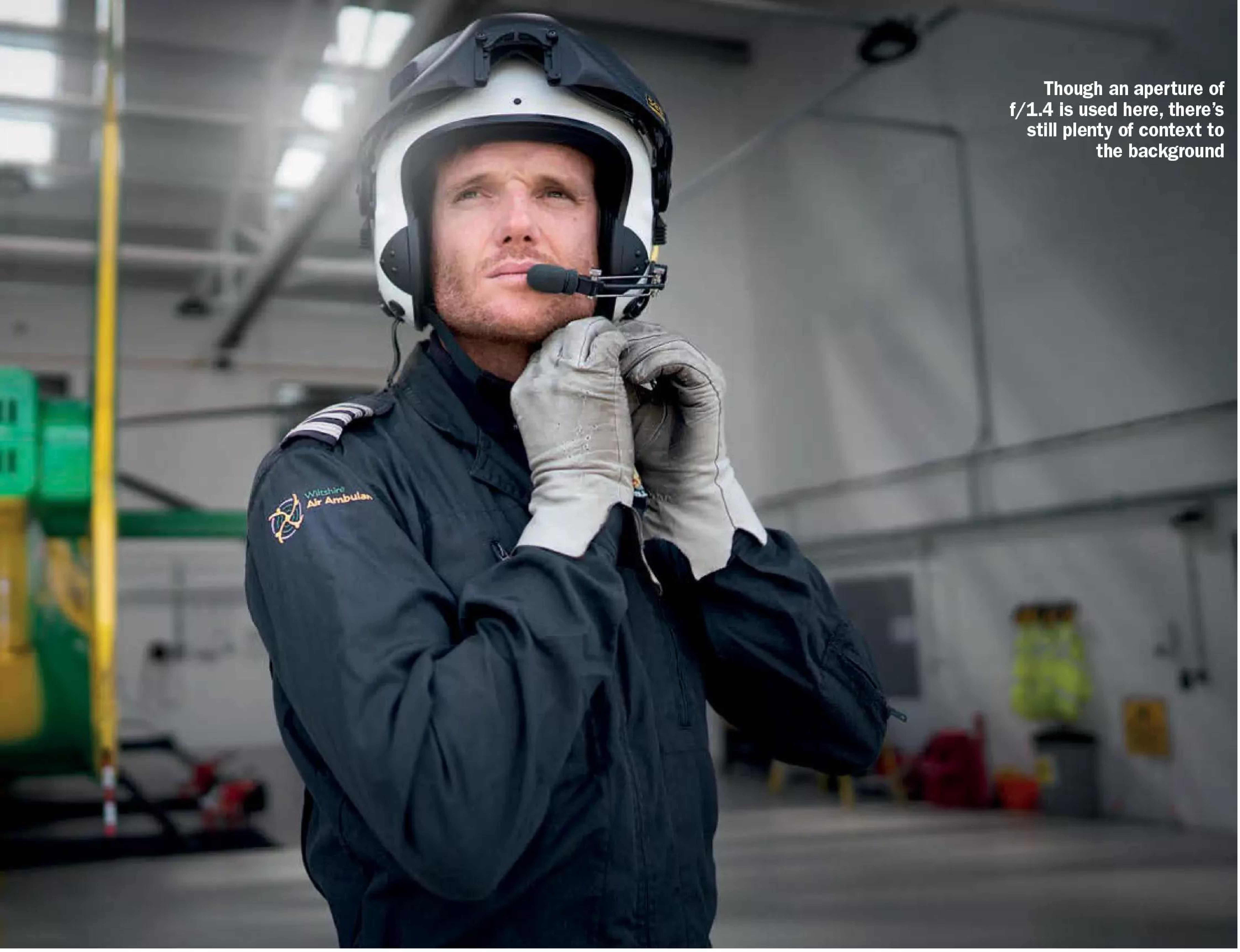
With a wealth of experience, Terry Donnelly shoots professionally in top-flight sports, editorial, PR and portraiture, and regularly features in national and international news media. Find out more at **www.terrydonnelly.co.uk**

FUNDAMENTALLY, the aperture is a tool to let more light or less light into the camera. But of course, it's more than that. Like many pros, I tend to work at wider apertures for a variety of reasons. Yes, it keeps my shutter speed up and means I can shoot more easily when available light is low, but it also adds separation and emphasis on the subject. Ultimately apertures such as f/1.4 or f/2 can bring a more cinematic look, which I love, but doing it successfully is about more than dialling in a number. Here are a few pointers.

This portrait needed to show movement in the background, so the aperture was stopped down to f/22

When to go deeper

Though I like to work at wider apertures, there are plenty of times I'll stop down to more middling f/stops like f/5.6 or f/8. Longer focal lengths, like a 135mm or 200mm lens, can create a shallower depth of field, so smaller apertures can help keep both the whole of the subject in focus and improve background context. Stopping down is also important with groups. If I'm shooting a wedding party or a family, I want separation for the subjects, but everyone needs to be within the focal plane and remain in focus! There are also times where I want to push the shutter speed lower to show movement in the background, and smaller apertures will help with that.



Though an aperture of f/1.4 is used here, there's still plenty of context to the background

PICTURES ON THESE TWO PAGES © TERRY DONNELLY

Take care in the shallows

Shooting with a very shallow depth of field is something people associate with a more refined and professional look. But be careful. Novices often go too far with background blur. If all you have is a completely soft background, images will lose context. I often shoot character and environmental portraits, so I want a background to be recognisable, even if it's out of focus. Take care that you adjust the aperture for the size of the subject's head, too. I find that shifting to f/1.8 or f/2 for men helps to keep their larger features in focus.

You can still work at very wide apertures but try to use shorter focal lengths or step away from the subject a bit. Completely blurred backdrops also mean images lose depth. To offset that, remember you can compose with out-of-focus foreground elements, too.

Kit for working wide open

Using the wider apertures can be problematic in bright conditions like midday sun, where minimum ISO and highest shutter speeds can't give you correct exposure values. Historically, that was down to the limits of a camera's maximum shutter speed, typically 1/8000sec. Using modern cameras with fast electronic shutters capable of exceeding that can solve the problem. Fitting an ND filter to decrease the light intensity entering the camera will help, too.

Flash power can also be a problem – there can be too much of it for wider apertures even at the lowest output, so either fit an ND filter to the camera or a diffuser to the light source. Alternatively, use lower-powered flash heads, or – like me – switch to LED lighting. My Rotolight NEO and AEOS lights can be set to low output and work brilliantly with wider apertures, plus – unlike flash – you can see exactly the effect you're getting before you shoot.

EVF MAKES IT CLEARER

As a Sony Alpha user, I know how beneficial shooting with a mirrorless camera can be in judging the effects of aperture. Obviously, it becomes second nature as you learn what works for you, but an EVF shows depth of field in a way that an optical viewfinder can't. Remember, a DoF preview on a DSLR will progressively dim the brightness, but with an EVF, it's obvious, and you can see if you're getting enough subject sharpness or context in the background. Yes, you can shoot and chimp the screen, but that takes you out of the moment.

α7R II
MENU
C3
AF/MF
AEL
Fn
DISP
ISO
C4
SONY

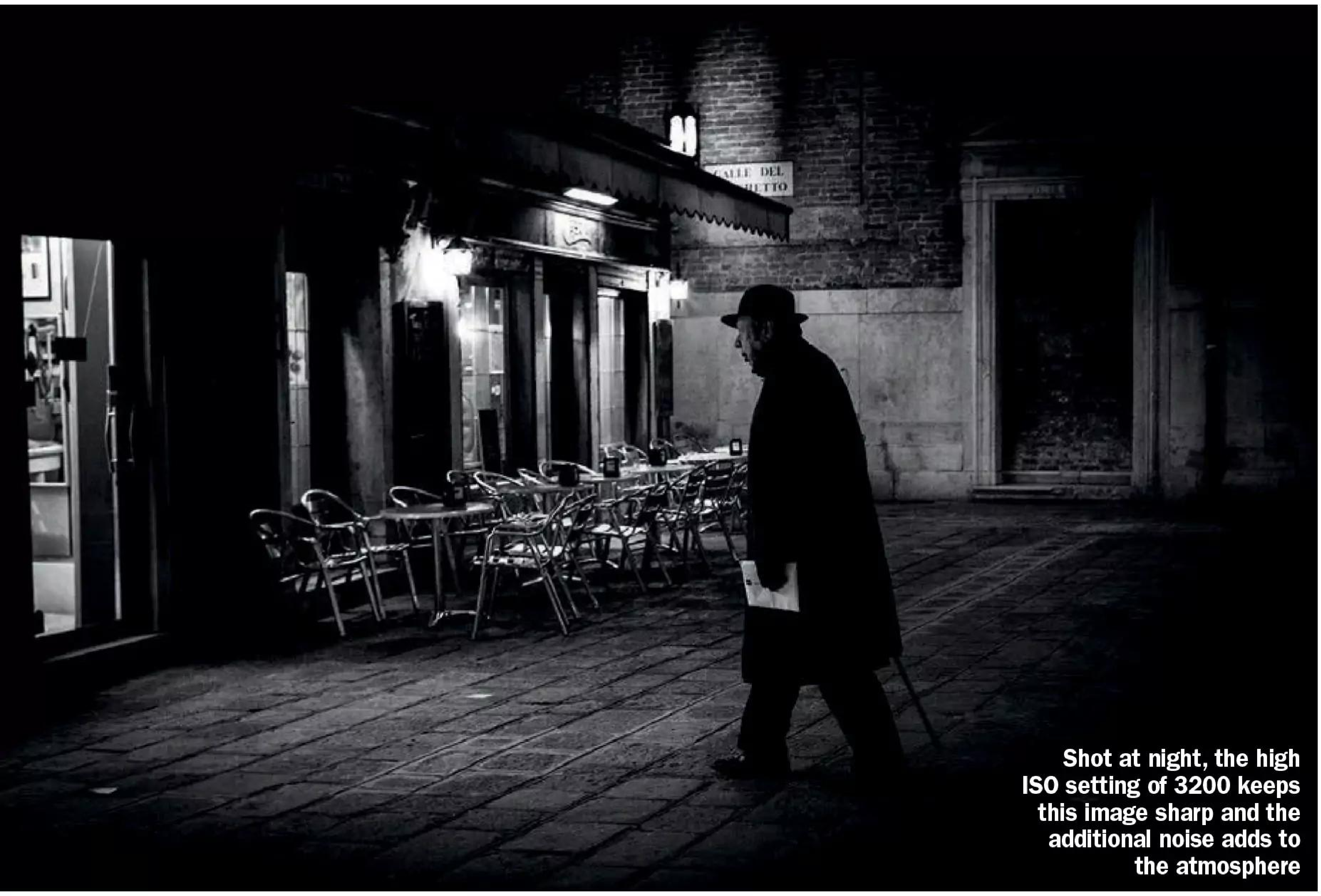
ISO

Street specialist Brian Lloyd Duckett says it's time to reevaluate how you use ISO and how working in Auto mode can free up your photography

Brian Lloyd Duckett

Brian Lloyd Duckett is a pro street photographer and Fujifilm ambassador who runs workshops via streetsnappers.com. His latest book, *52 Assignments: Black & White Photography*, is out now, and he's also on YouTube **@streetsnappers**

I WISH I had a pound for everyone I meet who thinks that high ISOs are the work of the devil. Many of us grew up with the mantra of 'use the lowest ISO possible,' but camera technology has moved on so much today that high ISOs are no longer a bad choice. In fact, I use them all the time to help me get sharper images. I'm a documentary and street photographer and being completely flexible with my ISO is central to my way of working. So, my advice is to forget what you've been taught and be a little more liberal with your ISO settings. Sure, it's maybe a new way of thinking, but once you accept it, you'll never look back.



Shot at night, the high ISO setting of 3200 keeps this image sharp and the additional noise adds to the atmosphere

Aim high

Things are often moving fast on the streets and a high ISO allows me to work with a fast shutter speed. It's usually better to have a tiny – often imperceptible – amount of extra noise than a picture that's virtually unusable because it's blurred. I'll let my ISO go to 6400 for daytime shooting and 12,800 at night without any worry at all.

Then there are times when a little bit of noise from high ISO is a welcome thing. I'm currently shooting a black & white documentary project, mostly in low light and which has a gritty, contrasty aesthetic; using high ISO is absolutely no problem and even adds to that.

If you shoot street portraits, you'll probably want to open up the lens. For instance, this was shot at f/1.2. On auto ISO, the setting will drop right down, to compensate

> 'It's better to have a tiny amount of extra noise than a picture that's unusable because it's blurred'

PICTURES ON THESE TWO PAGES © BRIAN LLOYD DUCKETT

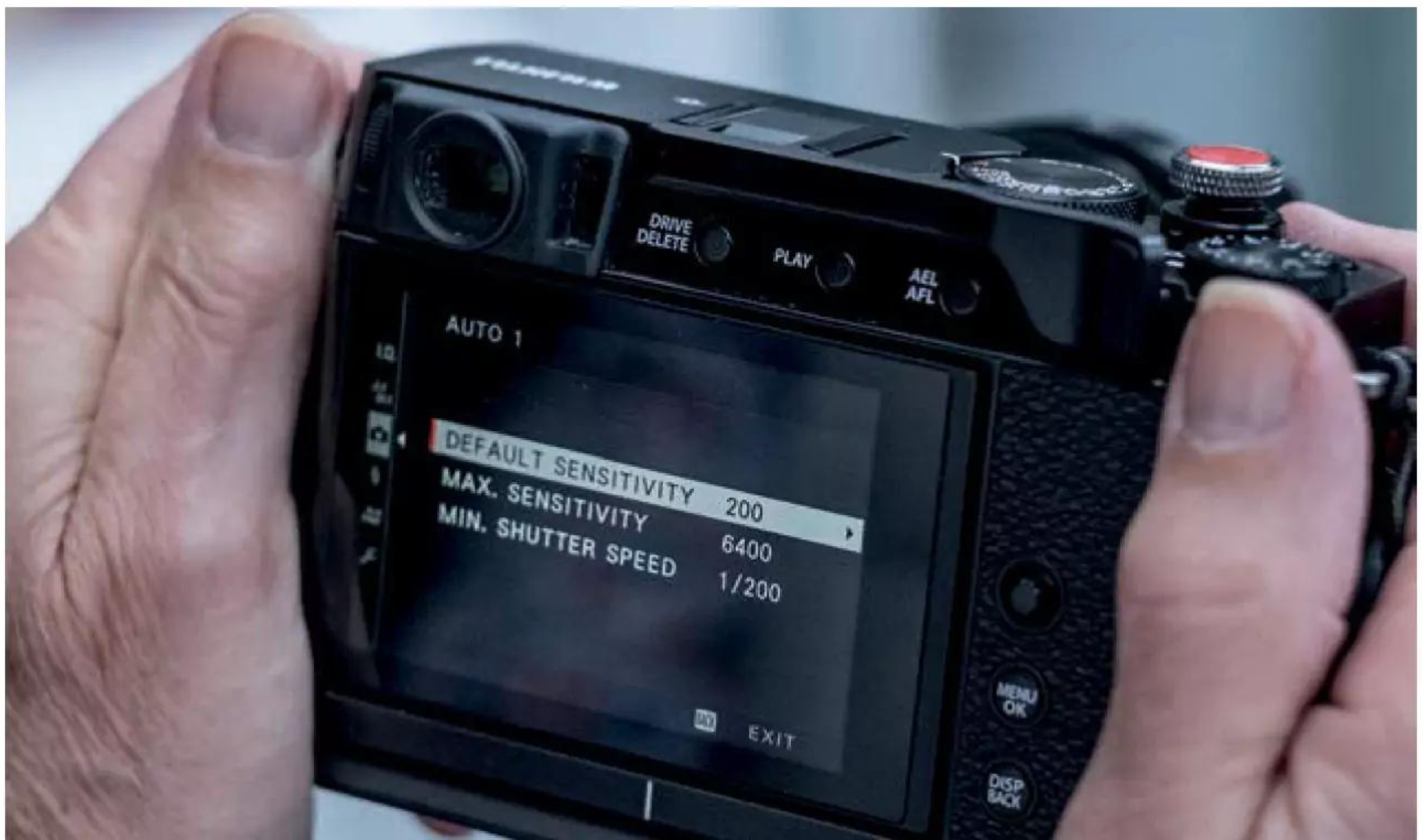
When to go low

Of course, there are times when you don't want or need a high ISO, such as when you're shooting with a very wide aperture, when there's very strong light or when you need to keep the shutter speed low – for example, for a shot that needs motion blur. I shoot lots of street portraits and I tend to shoot wide open for a shallow depth of field. In those cases, this usually means I can have a reasonably brisk shutter speed and can let the ISO fall. Setting the Auto ISO's parameters to include the lowest level means it always has that option to drop to if required.

The 'set it and forget it' approach

When you get confident in using your camera's higher ISOs, the Auto ISO option becomes a brilliant tool. I think of Auto ISO as my 'flexible friend'. It simply adjusts itself to the level I need to get a perfect exposure, and when you think of it that way, why wouldn't you use it? It gives me so much flexibility that I use it for my street shooting and just about everything else.

It's also a vital part of my 'set it and forget it' approach. With these settings you can forget about what's going on in the camera and can focus all your attention on what's happening around you, searching for subjects and ensuring you get the best possible composition. Working in aperture priority mode, my aperture is usually around f/8, for a decent depth of field. I set the ISO to Auto, then adjust the range in which it will work to 200-6400 for daytime shooting (or 400-12,800 for night shooting). Finally, I set the minimum shutter speed to 1/200sec. Any exposure tweaks are quickly made with exposure compensation.



AUTO 1

DEFAULT SENSITIVITY 200
MAX. SENSITIVITY 6400
MIN. SHUTTER SPEED 1/200

STOP FEARING ISO

If, 40 years ago, you told photographers they could change the sensitivity of the film they were using without taking it out of the camera they would have bitten your hand off for the freedom it gives. And yet many photographers only half-accept this benefit and stick rigidly to manual ISO settings. ISO is only a tool that helps you work in dim or bright light, and in that way, I never let it compromise the aperture or shutter speed that I want to use, both of which are far more important to me.

Shutter speed

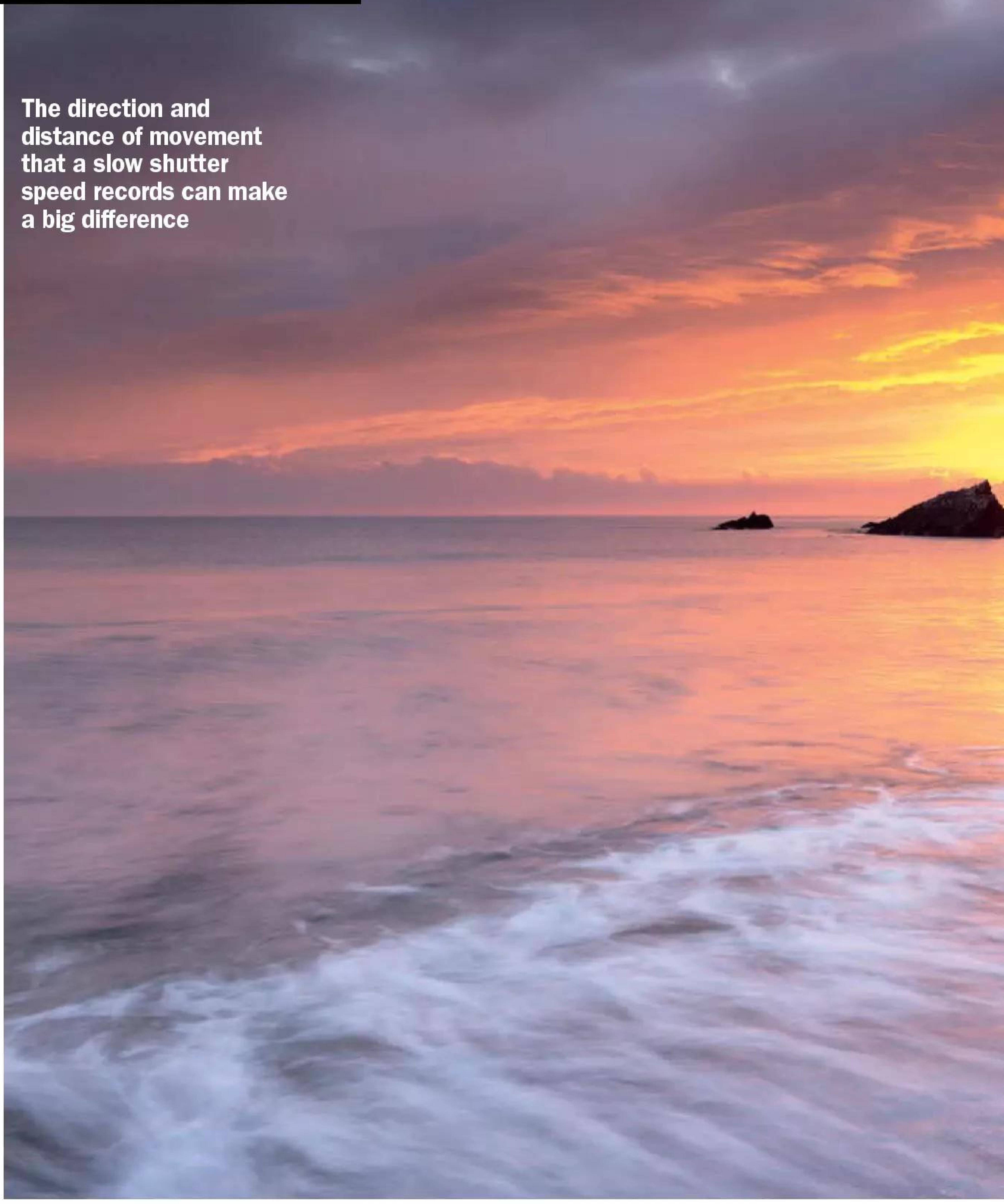
Landscaper Alan Howe talks about the importance of shutter speed in scenic photography and how to keep longer exposures looking natural

Alan Howe

Alan Howe is a semi-professional landscape photographer whose work has featured in magazines, calendars, and National Trust products. He provides landscape tuition and is an ambassador for Kase Filters.
www.devonlandscapephotography.co.uk

PICKING the right shutter speed is a vital ingredient in any type of photograph and that includes landscaping, which is my passion. Primarily, of course, the 'right' shutter speed achieves an accurate exposure and leads to maximum image quality. But with modern cameras making exposure so easy – and especially when working in aperture priority which is what I mainly do – what people really notice is the secondary effect of shutter speed: how it renders movement.

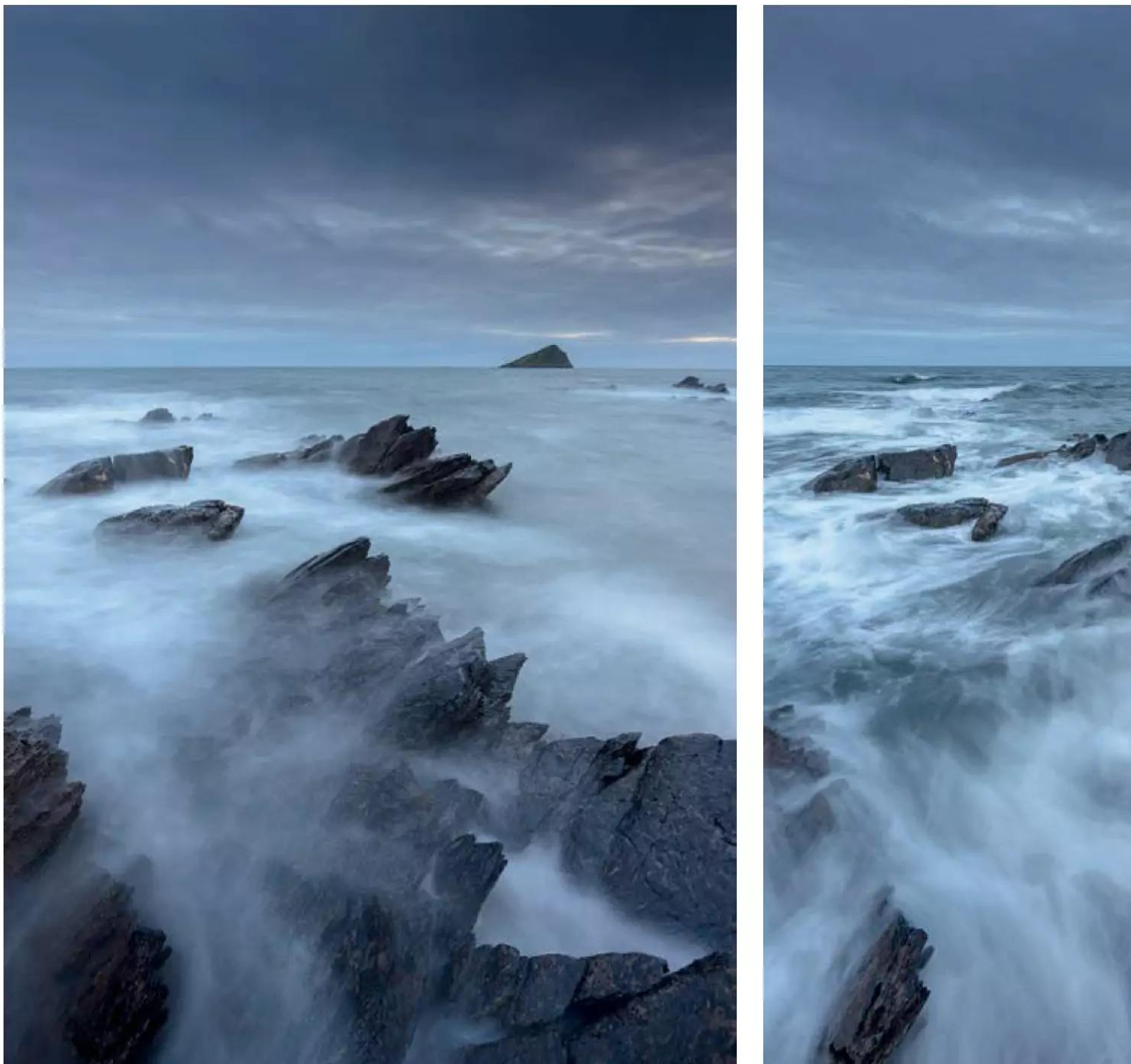
For me, what's most important about that is how movement makes me feel about a scene. I'm a fan of natural-looking landscapes and controlling shutter speed is a big part of that. Simple, subtle movement from slower speeds, and clear details is what I want, so here are some of the ways I go about it.



The direction and distance of movement that a slow shutter speed records can make a big difference

When to go faster

Extreme long exposures have their place, but often make scenes look unrealistic. In that way, I think super-slow speeds have become a bit of a cliché. Conversely, landscapes shot at settings like 1sec or 5secs, take on a calmer and more serene look while still seeming natural. For me, the vast majority of the time, this works better in telling the story of that location. So, for instance if I want to show the sea on a stormy day, there's little point in using a speed of 20 or 30secs which will blur waves into a mist. Captured movement must have some direction and shape or the picture will lose its meaning.



Shot at 0.6sec and 8 secs shutter speeds, the movement of the water looks very different

PICTURES ON THESE TWO PAGES © ALAN HOWE

Judge the movement

Exposures need to be activated and timed for the speed and direction of what you're shooting. For instance, the usual benefit of flowing water is that it will lead the eye into the scene, so if you're at the coast, try to shoot a wave that's receding, rather than breaking. Slow water might need 5secs while faster motion could get the motion blur you want at 2secs. And even at an identical shutter speed, no two waves will look the same, so experimentation with movement is key. The same goes for clouds, and though the shutter will pick up movement across the frame more effectively than motion into the scene, it's the latter that draws the viewer in. The focal length and how close you are to any movement also affects the shutter speed you need. Distant waves will need a longer speed than a stream that's right under your lens.

Increase shutter speed for longer lenses or to stop movement in the frame

CONTROLLING THE LIGHT

When it comes to controlling shutter speed, filters are the landscaper's friend. But because I want natural-looking scenes, I don't use stronger than a 3-stop ND to cut out light, and I'll take it off when the light is low enough. I use Kase Wolverine filters, including a polariser, which also cuts out about a stop of light, allowing those slower speeds. Naturally I'll lower the ISO – down to 50 on my Nikon D610 if needed – but I don't like to close the aperture below f/16, as sharpness suffers and every mote of dust on the sensor will become visible.

Remember, too, that as a landscaper, part of the skill is to wait for the light to be right, so be prepared to get to a location early enough for the light to be less intense or wait for it to fall at the end of the day.

How timing tells the story

Though my preference is to shoot landscapes with exposure times of a few seconds, there are plenty of times that I'll quicken the exposure. A good example is if you want to stop water, like raindrops falling from a leaf, waves breaking over a jetty, or snow drifting in the air. In those cases, I'll bump up the ISO to get speeds like 1/100sec or 1/125sec. Another time that I look for faster speeds is when using longer lenses. Just as for wildlife photographers, long focal lengths can show vibration and soften landscape details more so than when working at a wide angle, so if I'm framing a lone tree or distant peak, I'll reach for faster speeds.

Six hidden camera power features

The average modern camera has such a wealth of features that it's easy to miss a few. **Angela Nicholson** reveals six notable ones that can really help

Live Bulb, Live Time and Live Composite

Olympus, now OM Digital Solutions, was the first maker to introduce these clever features. Their purpose is to take the guesswork (or maths) out of shooting long exposures.

With most cameras you need to switch to Bulb mode when you want to shoot exposures longer than 30 or 60 seconds. When Bulb mode is activated, the shutter is held open for as long as the shutter release (either on the camera or a remote release) is held down – though it's often limited to 30 minutes. It's great for night photography and shooting with a Big Stopper ND filter over the lens to enable water or cloud movement to be blurred.

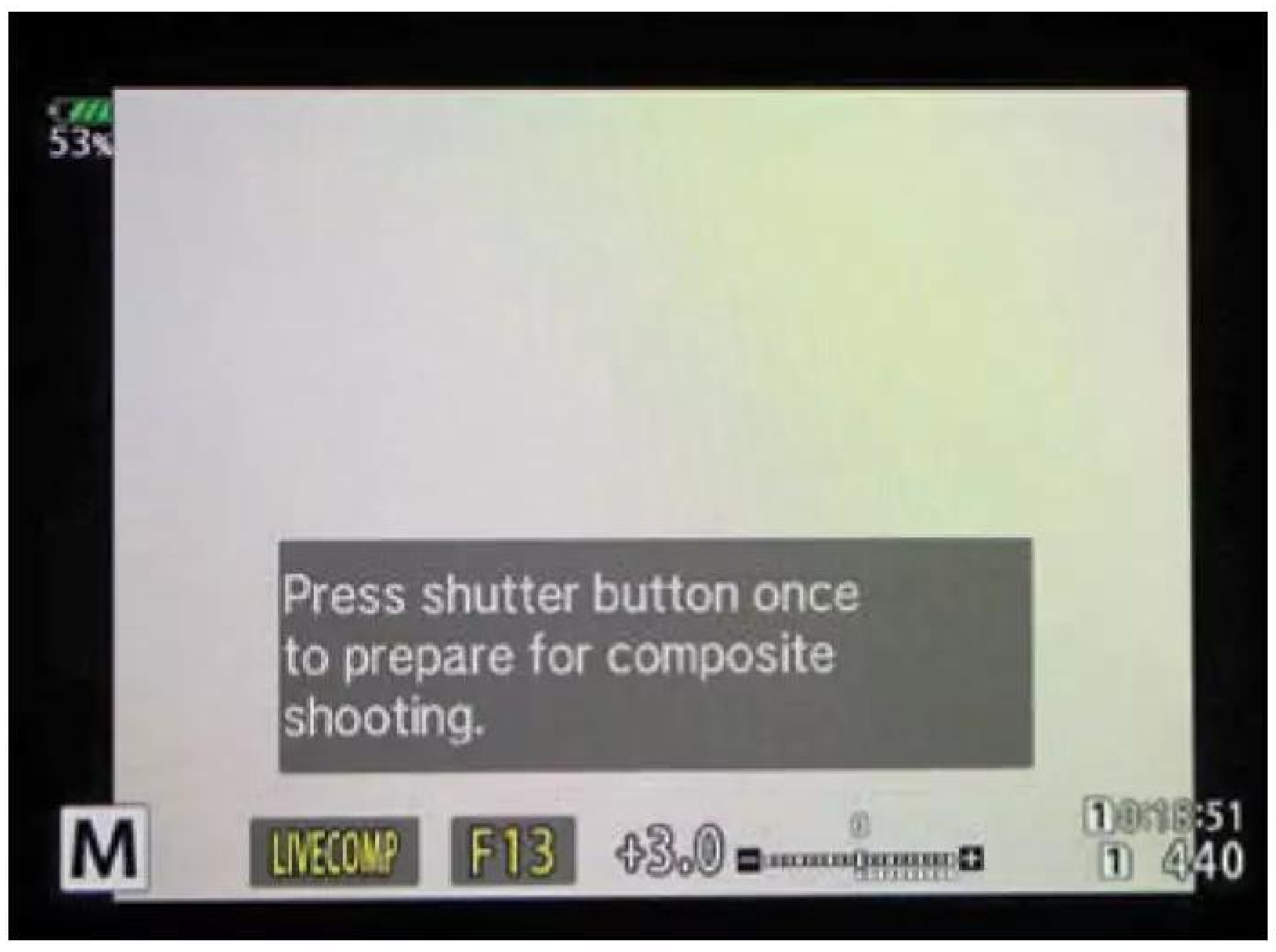
Normally, if you're using an ND filter to extend the exposure time, you have to calculate how long the exposure needs to be on the basis of the shutter speed without the filter. If shooting at night, you can experiment with high ISO settings and a wide aperture to calculate how long the exposure should be at the aperture and ISO you want to use. Live Bulb mode does away with all of that because you see the image build up on the screen or in the viewfinder of the camera and you simply close the shutter once you're happy with how the image looks.

Live Time mode is similar to Live Bulb Mode except the shutter opens with a press of the shutter release and is closed with a second press once you're happy with the way the image looks on screen.

Live Composite mode is similar to Live Time mode but it's complicated by the fact that the long exposure is made up of a series of shorter exposures. The clever part is that the camera composites the images

Composite mode is perfect for light painting

ALL PICTURES ©ANGELA NICHOLSON


Press shutter button once to prepare for composite shooting.

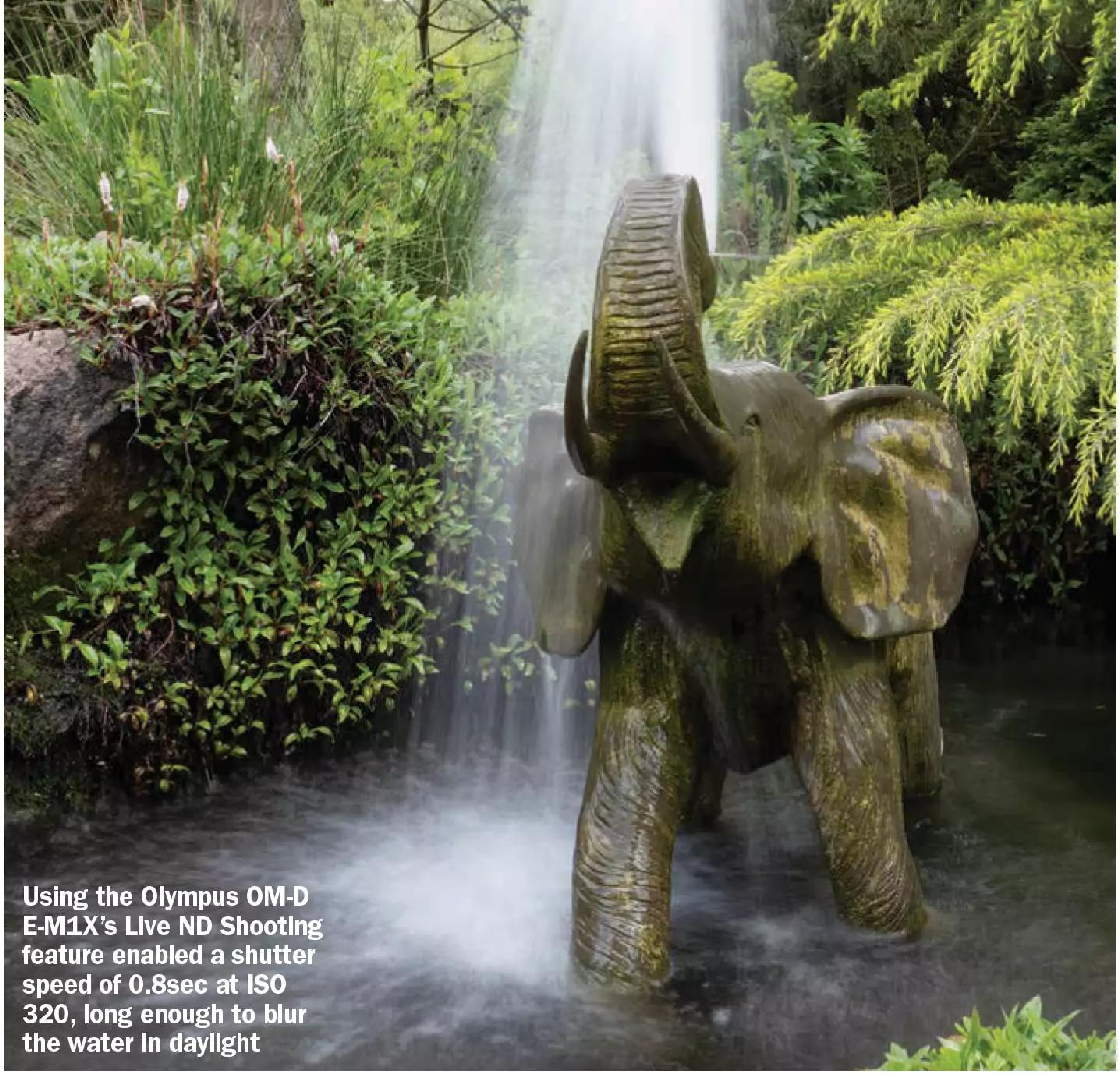
Some Olympus cameras must be in Manual exposure mode to access Live Composite mode

using the equivalent of the Lighten blend mode in Adobe Photoshop and as a result, after the first exposure, only the brighter areas of subsequent images appear in the final image. It means that it's not the right choice for shooting a scene in which the subject brightness doesn't change, but it's perfect for traffic trails and fireworks.

How to use Live Composite mode

Before you switch to Live Composite mode, take a test shot or two to find the correct exposure for the ambient lighting. Some Olympus or OM System cameras have a B setting on the mode dial that allows you to access Live Composite mode, but on others and on the Panasonic G90, you have to turn to manual exposure mode and extend the shutter speed time until you go past 60 seconds, Live Bulb and Live Time until Live Composite mode is activated. Meanwhile, Live Composite mode is activated via the menu on the Panasonic S5. Next, on an Olympus camera, press the menu button and set the exposure time to the base exposure that you found from your test shots. Now, when you press the shutter release, the camera will take the first shot and set the base exposure. With that done, press the shutter release again to set the camera shooting continuously. It will capture a series of images using the same exposure time as the first. Check the image on the back of the screen and press the shutter release again once you're happy.

The OM-1's mode dial has a B setting to access the Live Bulb, Live Time and Live Composite modes



Using the Olympus OM-D E-M1X's Live ND Shooting feature enabled a shutter speed of 0.8sec at ISO 320, long enough to blur the water in daylight

Live ND Shooting

Live ND Shooting mode is another great feature introduced by Olympus and it was first seen in the Olympus OM-D E-M1X, but it's also found in the OM System OM-1 and OM-5. It reproduces the impact of attaching a neutral density (ND) filter to a lens to extend the exposure time and enable movement to be blurred in daylight.

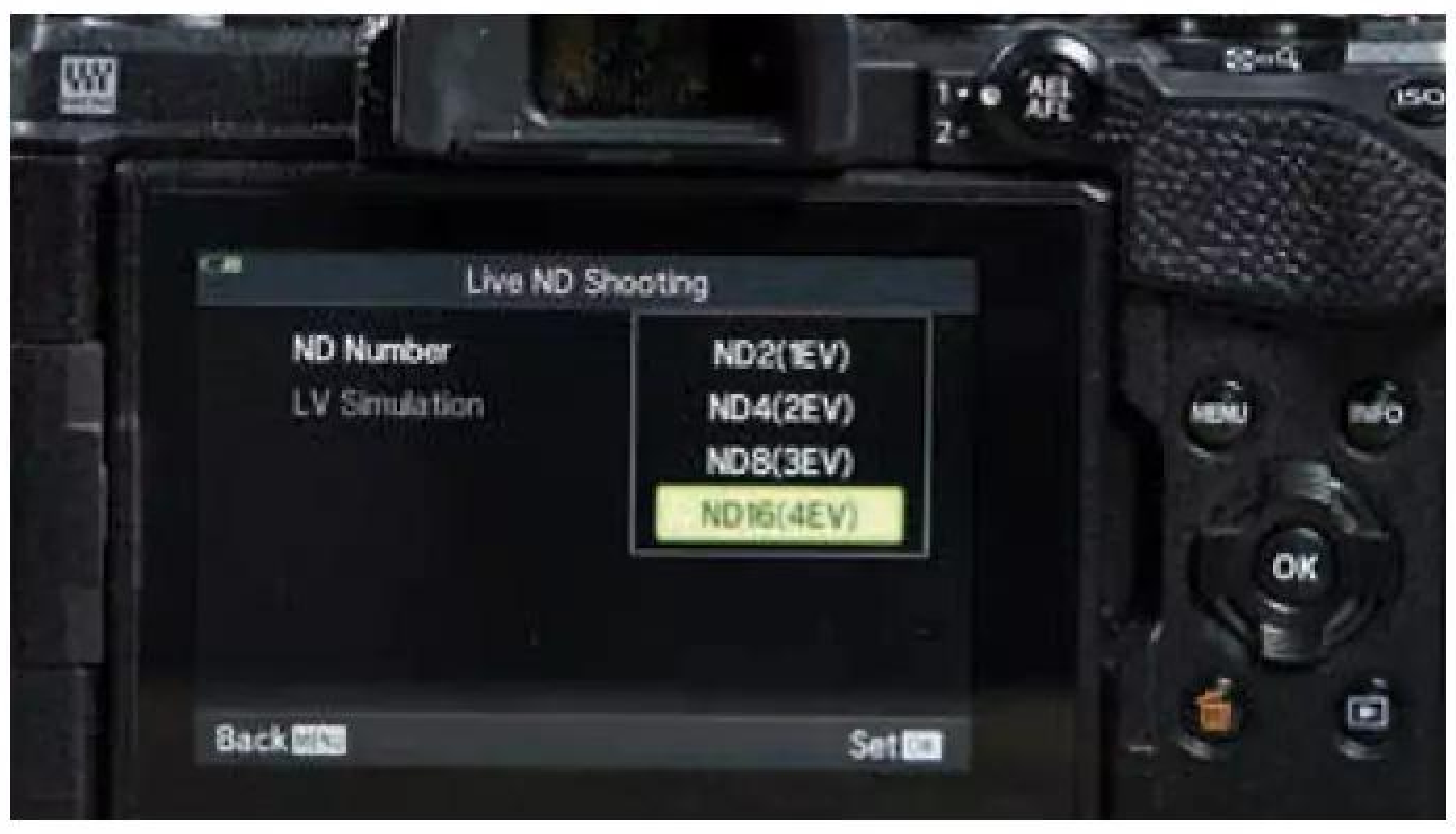
Live ND Shooting can only be used when the camera is set to manual or shutter priority mode.

OM System tidied up the menu system for the OM-1 and you'll find Live ND shooting in the Computational Modes section of the menu. The OM-5 doesn't have the refreshed menu system so Live ND Shooting is found in Shooting Menu 2.

The E-M1X and OM-1 have five ND strengths available for selection, running from ND2 (1EV) to ND32 (5EV), but the OM-5 has just four and tops out at ND16 (4EV). The option that you select depends upon the exposure that's required without the filter effect and the exposure time that you'd like to shoot with. If you need an exposure of 1/60sec without the filter, using the ND16 setting extends it to 1/4sec while the ND32 setting takes it to 1/2sec.

Once the ND setting is selected, adjust the exposure time to give the correct exposure. The image in the viewfinder and on the screen of the camera can become ghost-like as the camera shows the impact of the long exposure with any movement being blurred.

Traditionally, you'd expect to mount a camera on a tripod when you're shooting long-exposure images, but OM System's in-body image stabilisation (IBIS) system is so effective that you can often get away without using one if the shutter speed is less than a second, and in some cases you can get sharp handheld images with exposure times longer than a second.


Live ND Shooting
ND Number
LV Simulation
ND2(1EV)
ND4(2EV)
ND8(3EV)
ND16(4EV)
Back MENU
Set OK

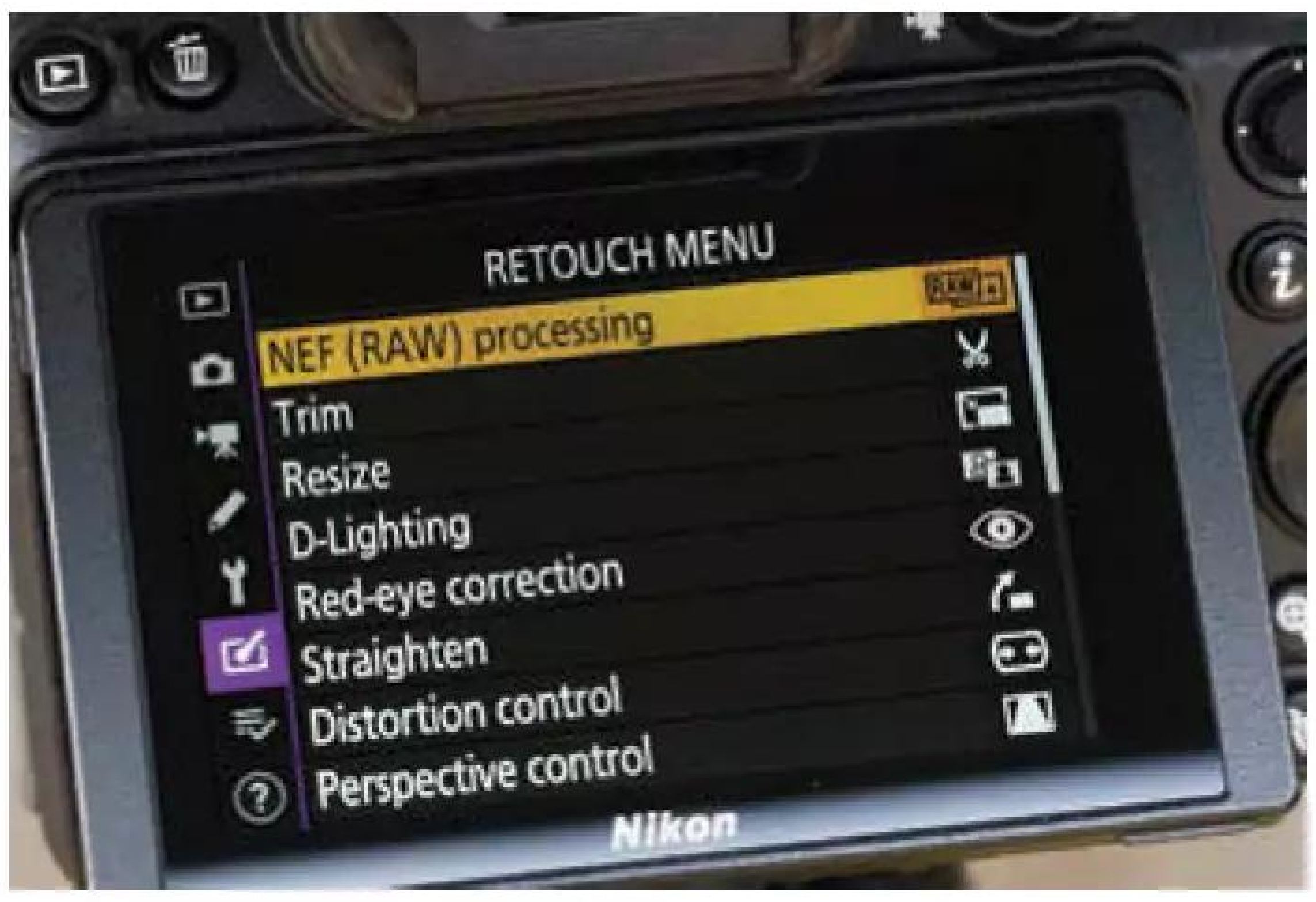
The OM System OM-5 has four strengths of ND filter available but the OM-D E-M1X and OM-1 each have five

OM SYSTEM
OM-5

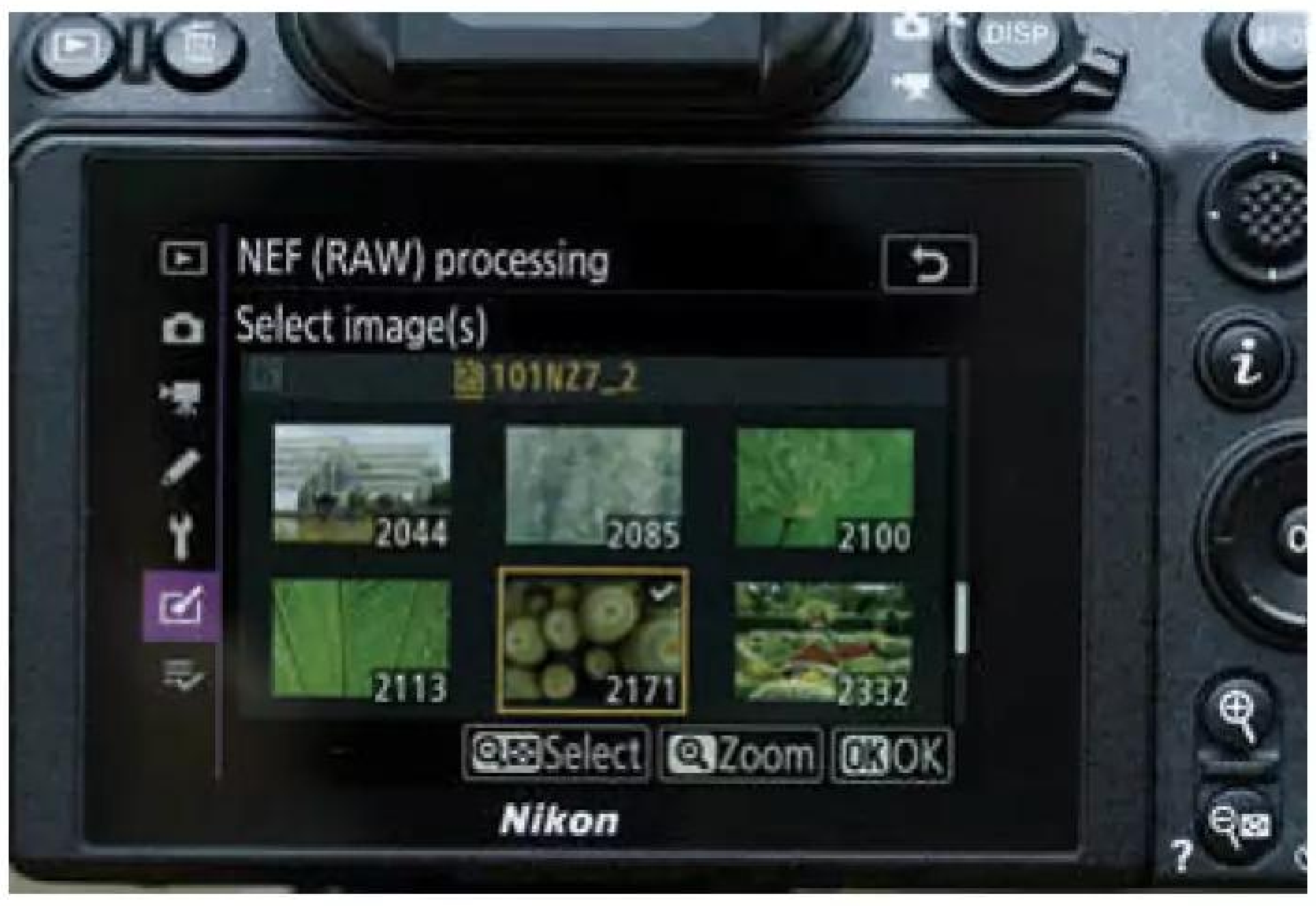
The OM-5 is the latest OM System camera to feature Live ND shooting

FUJIFILM
X-T4
Nikon

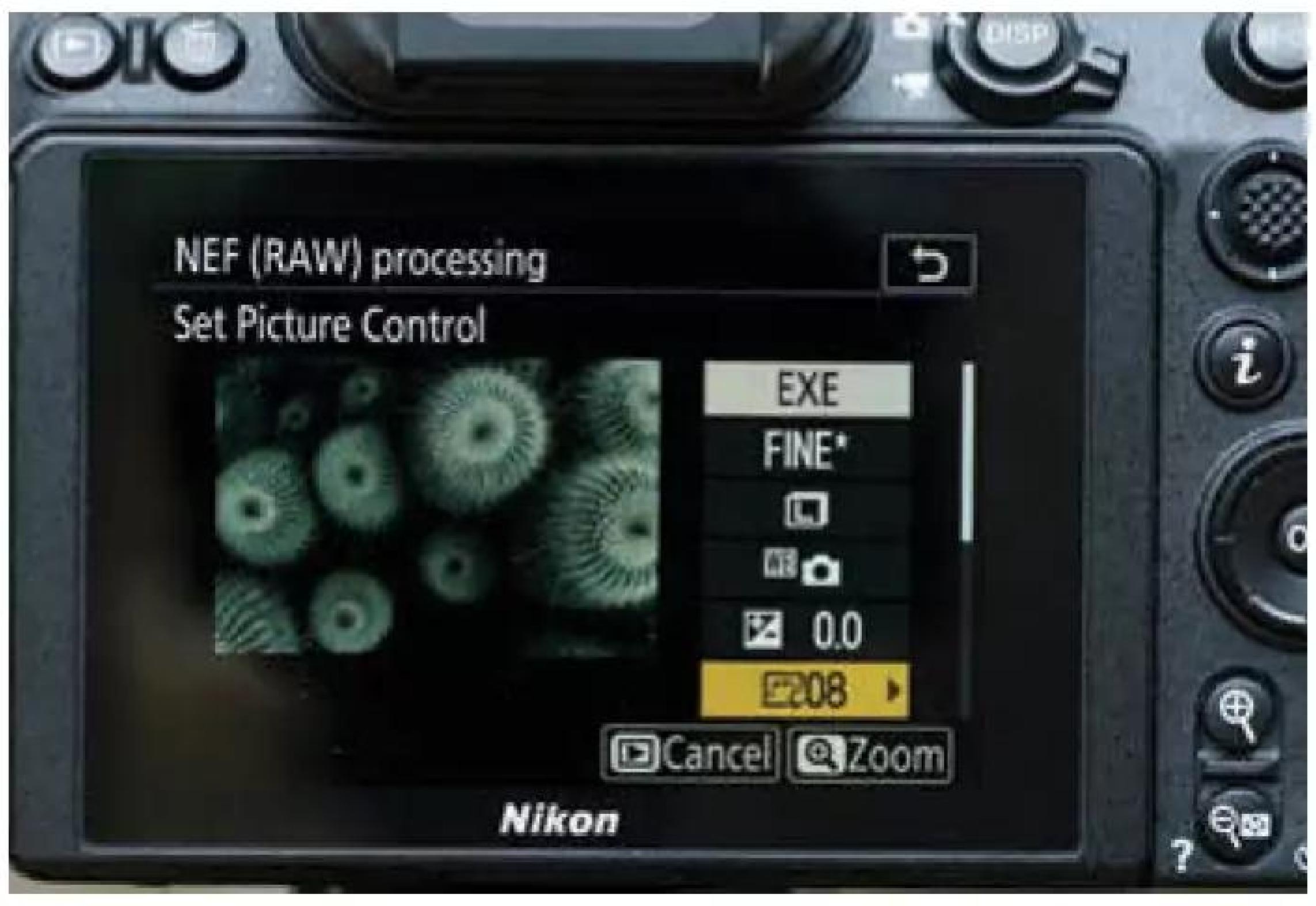
Lots of cameras enable raw files to be edited in-camera



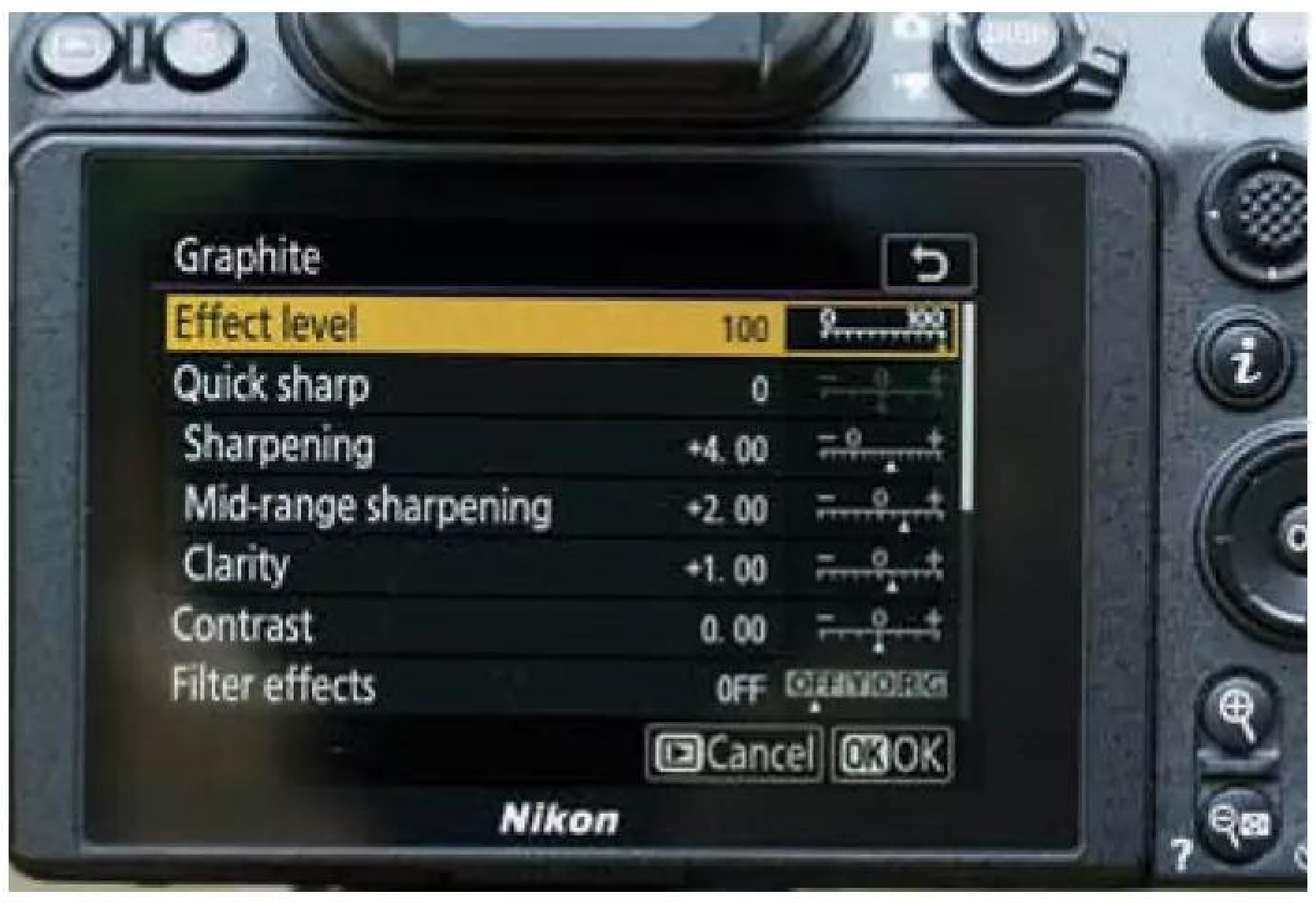
In-camera raw editing is found in the Retouch menu of Nikon cameras



Raw files are selected by tapping to highlight them in yellow and then tapping again to put a tick in their top-right corner



The parameters for in-camera raw editing are arranged in a column on the right of the screen



Effect level 100
Quick sharp 0
Sharpening +4.00
Mid-range sharpening +2.00
Clarity +1.00
Contrast 0.00
Filter effects OFF

There's lots of control over the Picture Control settings, especially for the Creative Picture Controls

In-camera raw-editing

Many photographers like to shoot in raw rather than JPEG, to ensure they have the maximum amount of data and flexibility with their images.

In-camera raw-editing, which is offered by many cameras (Sony models being a notable exception) is a great way of creating the images you want without having to fire-up a computer. It's also a nice way to spend a few minutes as you wait for your coffee to arrive in a cafe or when you're on the train home after a day out with your camera.

Just like processing a raw file using a computer, you can make some fundamental changes to your images such as adjusting the white balance or altering the Film Simulation mode, Picture Control or Picture Style very easily.

As a rule, you either need to select the raw-editing controls in the camera's menu and then select the image(s) to work on or you select the image first and then find the raw-editing controls in the menu.

Here's how it's done with Nikon Z-series cameras:

Press the menu button, navigate to the Retouch Menu and select 'NEFF (RAW) Processing' at the top of the screen. Tap on the screen, then press the 'OK' button or press the right navigation key to select the option.

On the next screen, tap on 'Select image(s)', press the OK button or press the right navigation button. You can now see and scroll through the images available for processing. Tap on the one(s) you want to edit to put a yellow box around them and then tap again to put tick in their top right corner before pressing the OK button.

You'll now see a preview of one of the images you selected and all the adjustment controls in a column on the right.

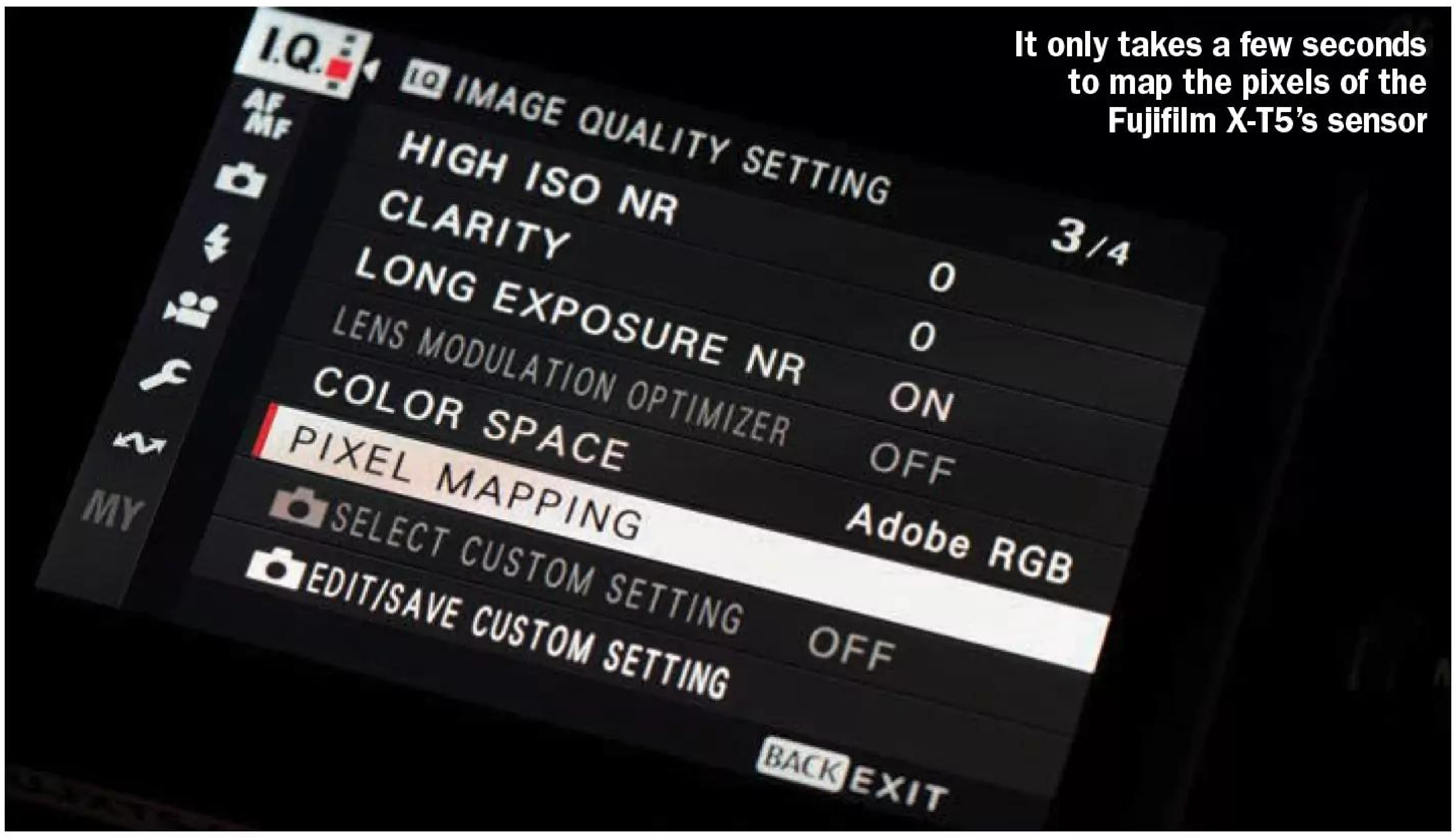
As well as being able to adjust aspects such as the white balance, exposure compensation, Picture Control, High ISO Noise Reduction, Vignette control, Active D-Lighting and Diffraction compensation, it's possible to change the image colour space and set the quality and size of the final JPEG output. The options are the same as you will find at the shooting stage.

Navigate to the feature that you want to adjust and either tap it on the screen, or press the OK button to see the options available for selection.

As well as being able to switch between Picture Controls, it is possible to adjust the Picture Control's sub-settings, which means you can adjust the Saturation of the Landscape Picture Control, for example, and you can adjust the overall impact of the Creative Picture Controls.

Once you've finished making the edits to your images, highlight 'EXE' at the top of the adjustment column and press the OK button to save the image as a JPEG with the new settings – the raw file is still available on your memory card.

Remember, if you selected multiple images to edit, they will all be processed with the same settings.



I.Q.

IMAGE QUALITY SETTING 3/4
HIGH ISO NR 0
CLARITY 0
LONG EXPOSURE NR ON
LENS MODULATION OPTIMIZER OFF
COLOR SPACE Adobe RGB
PIXEL MAPPING
SELECT CUSTOM SETTING OFF
EDIT/SAVE CUSTOM SETTING

It only takes a few seconds to map the pixels of the Fujifilm X-T5's sensor

Pixel Mapping

While luminance and chroma noise is to be expected when shooting at high sensitivity (ISO) settings, the pattern of the noise is random. If you see a spot that is a single colour and is always in the same place in your images, that can be a sign of a 'dead', 'hot, or 'stuck' pixel. This is something that is most often seen in long-exposure images and/or at high sensitivity (ISO) settings when any flaws in a pixel are amplified.

It's very easy to deal with the odd pixel when you're processing a still image, but it's a pain to have to do it in every shot. Fortunately, many cameras feature something called 'Pixel Mapping', which is designed to deal with the problem. Thankfully, it's a very simple process that just needs to be done once when you spot a persistent hot pixel.

On the Fujifilm X-T5, for example, you'll find 'Pixel Mapping' listed on the third page of the Image Quality (IQ) menu. To use it, simply select the option in the menu and press the 'OK/Menu' button, and then press the 'OK' button again when you see 'Start Pixel Mapping'. It's all done in a matter of a couple of seconds.

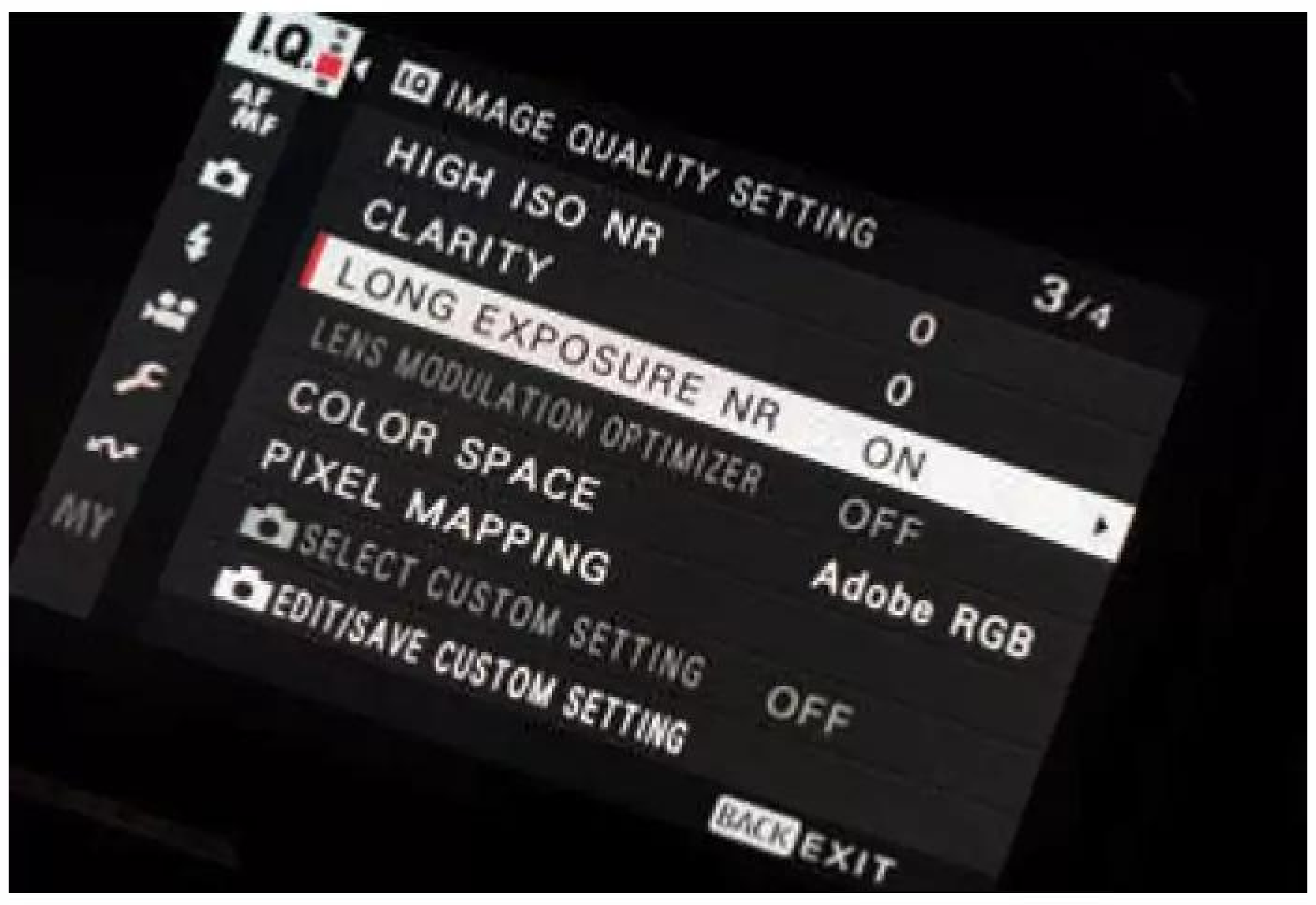
In-camera editing allows you to visualise your final image or even produce share-ready shots without firing up a computer

Long-Exposure Noise Reduction

Long-exposure noise reduction is a very useful feature for anyone who shoots long exposures and it shouldn't be confused with high-ISO noise reduction or Pixel Mapping, as it works in a different way.

The problem with long exposures is that the sensor heats up as you shoot and this can cause noise to build-up in images. Thankfully, unlike high-ISO noise, long-exposure noise tends to not be random and this makes it relatively easy for the camera to remove it on a shot-by-shot basis. The drag of long-exposure noise reduction, however, is that doubles the time that it takes to capture each image. That's because when it's active, the camera takes a second 'dark' exposure with the shutter closed after each shot. It uses the same exposure time as the image exposure and then extracts the noise that it finds in the dark frame from the image. It's very effective, if a bit tedious.

When the long-exposure noise reduction system is turned on, most cameras will only activate it when the exposure is 1 second or more in duration. However, some cameras have an 'Auto' setting which does the same thing, as well as an 'On' setting.

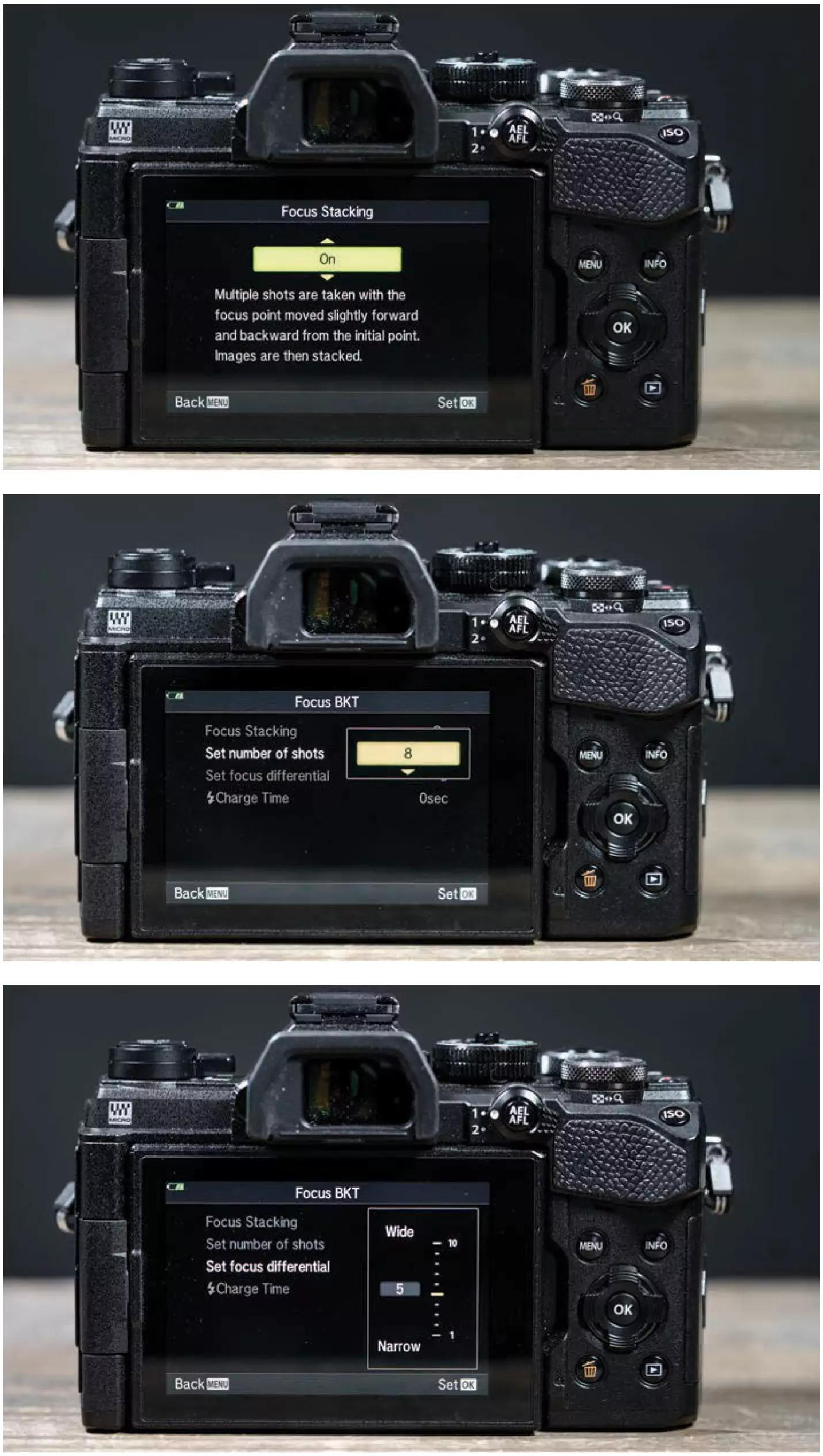


I.Q.

IMAGE QUALITY SETTING 3/4
HIGH ISO NR 0
CLARITY 0
LONG EXPOSURE NR ON
LENS MODULATION OPTIMIZER OFF
COLOR SPACE Adobe RGB
PIXEL MAPPING
SELECT CUSTOM SETTING OFF
EDIT/SAVE CUSTOM SETTING

Long-exposure noise reduction doubles the time it takes to produce every image, but it's very effective

ALL PICTURES ©ANICHOLSON


Focus Stacking

On

Multiple shots are taken with the focus point moved slightly forward and backward from the initial point. Images are then stacked.

Focus BKT

Focus Stacking

Set number of shots: 8

Set focus differential

Charge Time: 0sec

Focus BKT

Focus Stacking

Set number of shots

Set focus differential: 5

Charge Time

Focus stacking is made simple by the OM-5's stepped process

Focus stacking

Focus stacking is a technique that enables photographers to capture greater depth of field than normal in their images. It's very popular amongst macro photographers but it's also useful for landscape photography. A key benefit of focus stacking is that you can use a lens's optimum aperture rather than shoot with a very small aperture to get extra depth of field and encounter the associated image-softening that's caused by diffraction.

Focus stacking relies upon capturing a series of images with the focus moving through the scene between shots so that every part of it is sharp in at least one photograph. The images are then composited together to create a single image that is sharp from the foreground to the background. Dedicated focus stacking software such as Helicon Focus is available (for from $30 per year) to composite the images, but it can also be done in other editing software including Adobe Photoshop.

In the past, photographers had to move the focus point between the shots manually, which can take time, especially if you have to wait for the camera to stop wobbling between each shot.

Now, however, several cameras now have a focus stacking feature that sets the camera to adjust the focus automatically between shots as a series of images is captured.

Some cameras such as the OM System OM-1 and OM-5 go a step further by compositing the images in-camera, but you still get all the original images as well in case you want to composite your own version using software.

With the OM-1 you can composite up to 15 images whereas with the OM-5 you can only composite 8 images. Here's how it's done with the OM-5:

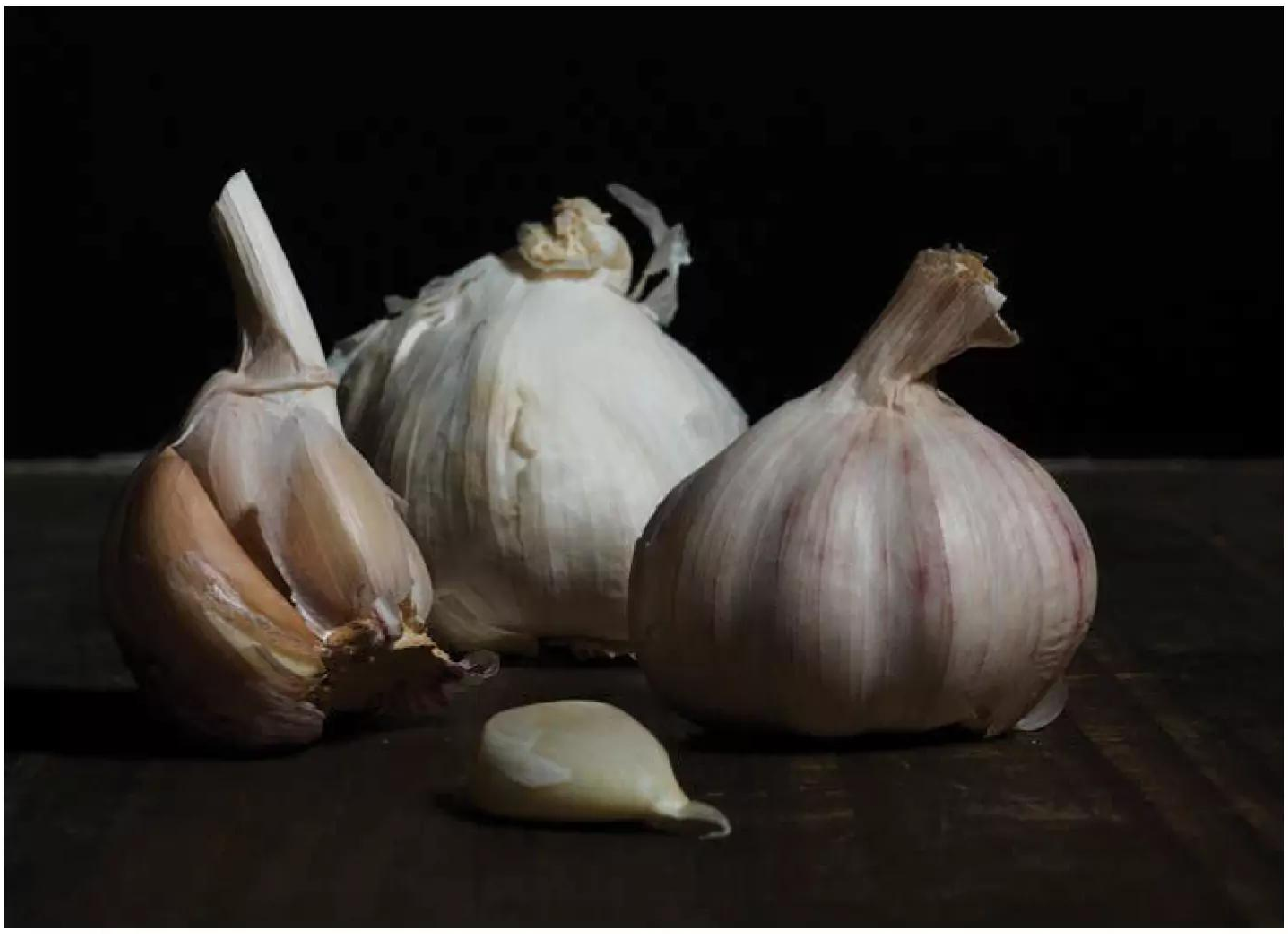
Navigate to 'Bracketing' in Shooting Menu 2, press the right navigation button and select 'On'.

Scroll down to 'Focus BKT', press the right navigation button, select 'On' and press the right button again.

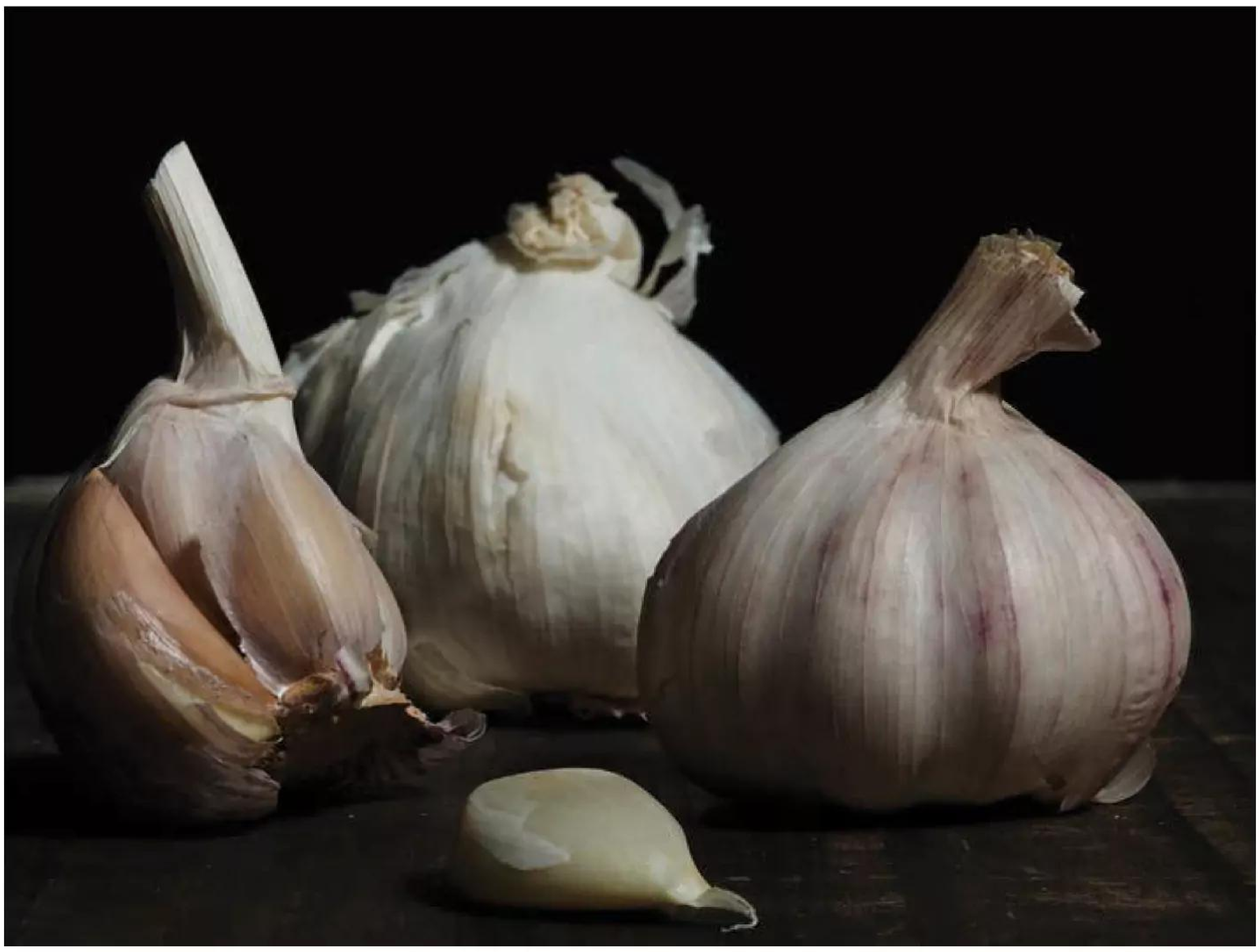
Switch Focus Stacking to 'On' and then use the other menu options to set the number of shots that you want to capture as well as the focus differential from 1 (narrow) to 10 (wide). It's worth experimenting with the focus differential setting as the impact will vary depending on the lens, aperture and focus distance.

Press the 'OK' button repeatedly to exit the menu, ensuring that the Bracketing is set to 'On'.

Focus a little further away from the



This image was created by shooting 8 images that were composited into one in-camera. The furthest bulb isn't in focus but there's much more depth of field than with any one of the 8 shots



Only a small part of this constituent image is in focus

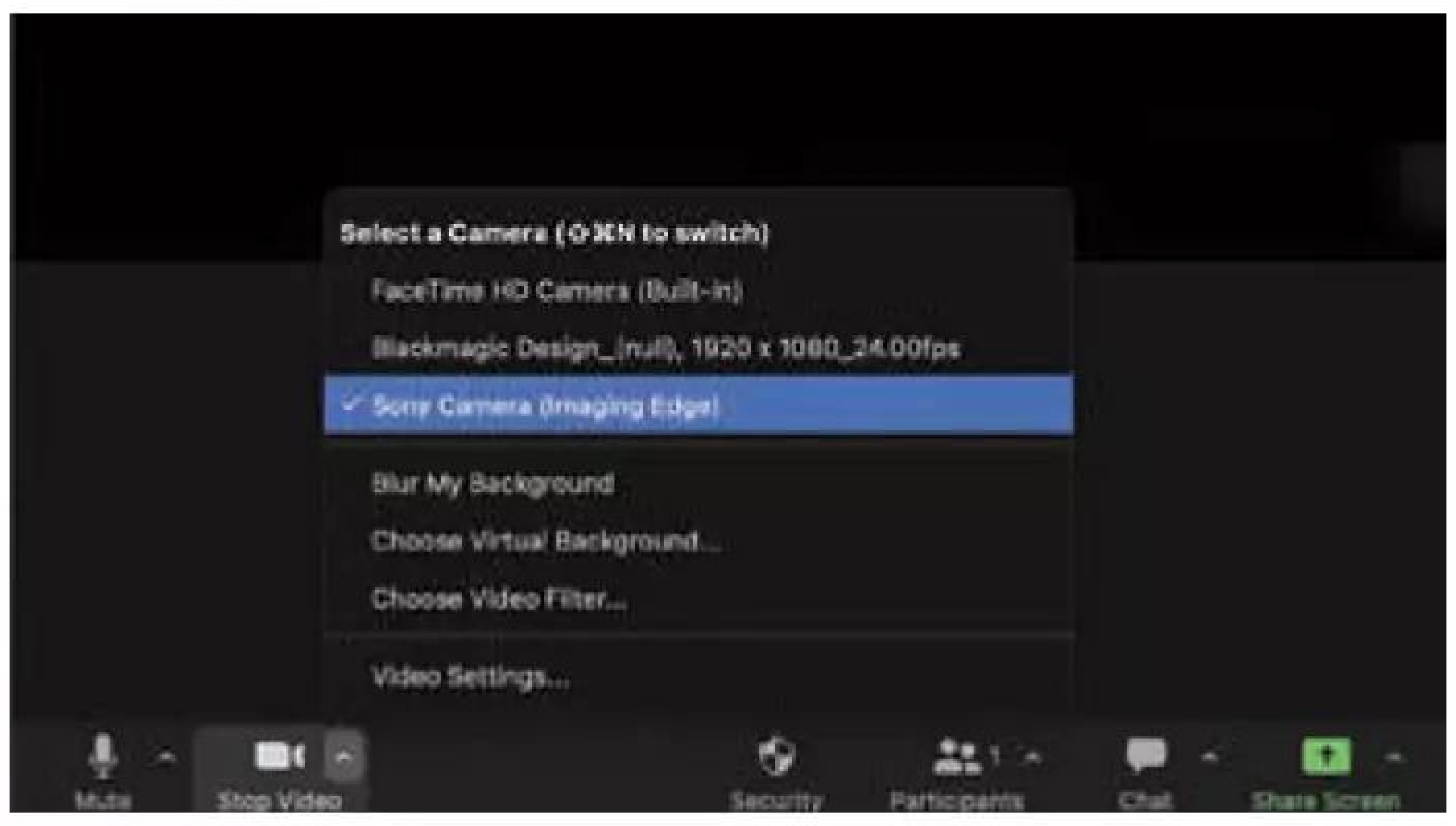
closest part of the scene that you want to be sharp and then press the shutter release button to capture the sequence of images. The camera will take a series of images, starting with a couple ahead of your original focus point and several behind.

When the images are transferred to your computer, you'll find that if you shoot raw and JPEG files simultaneously, you have both files for each of the base images and a composited JPEG.

If you want to get even greater depth of field than can be obtained through the automatic Focus Stacking system, set the Focus Stacking to 'Off' in step 2 and then the number of images can be set up to 999, with the same Focus Differential options as is available in step 3.

Now the camera will capture a sequence of images without compositing them and they can be combined using focus stacking software.

Webcam use


Select a Camera (⇧⌘N to switch)
FaceTime HD Camera (Built-in)
Blackmagic Design_(null), 1920 x 1080_24.00fps
✓ Sony Camera (Imaging Edge)
Blur My Background
Choose Virtual Background...
Choose Video Filter...
Video Settings...
Mute
Stop Video
Security
Participants
Chat
Share Screen

Once you've installed the software to make your camera work like a webcam, you should be able to select it for use in video-calling platforms like Zoom and Teams

Using a 'proper' camera can really raise your Zoom game and instead of using a virtual background, you can open the aperture to blur the background naturally. It's also possible to set an appropriate white balance, adjust the exposure and set the Film Simulation, Picture Control or Picture Style so the image looks better than with a standard webcam.

The popularity of video calls during the pandemic spurred several camera makers to make it easier to use a regular camera as a webcam. Unless you have a capture card, the first step is to download the manufacturer's webcam software for your camera – this is called EOS Webcam Utility for Canon cameras, Fujifilm X Webcam for Fujifilm cameras, Nikon Utility Webcam for Nikon and Sony Imaging Edge Webcam for Sony. In each case, the software enables you to access the camera as a webcam for use in popular video platforms such as Zoom and Facebook Live.

Here's how to use a Sony A7 III as a webcam:

- Download and install Sony Imaging Edge Webcam on your computer.
- On the camera, go to the Network section of the menu and under Transfer/Remote, ensure that Ctrl w/Smartphone is set to 'Off'.
- Now go to the Setup4 in the Menu and set the USB Connection to PC Remote.
- The next step is to connect the camera to the computer via a USB cable.
- Now when you open your preferred video meeting software, you should find Sony Camera (Imaging Edge) in the camera options.

A full-frame camera might be overkill but it will make your video calls look a lot better than the average webcam does

Why bother with raw?

Shooting JPEGs can save you time, space, and even make you a better photographer. **Angela Nicholson** explains

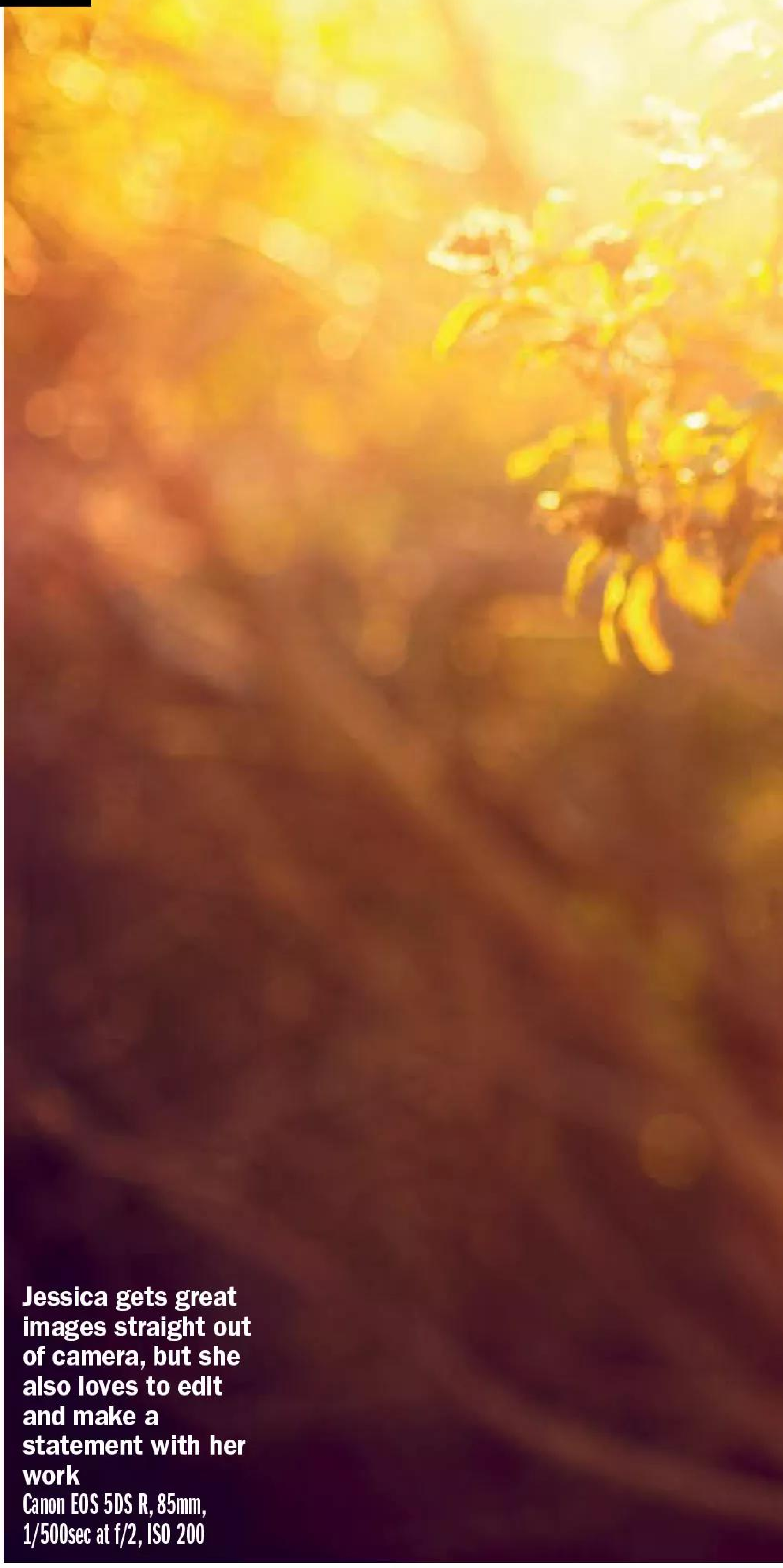
Raw files may contain the maximum amount of data that you can get from your camera's sensor, but you have to process them and save them in a universal format like JPEG before you can share them. As well as taking extra time, processing raw files on a computer can encourage us to make some of the most important decisions about our images at the wrong stage. Despite the amazing technological strides that have been made with digital cameras and the advancement in image-editing software, the old adage about 'getting it right in-camera' is still valid and thinking about the final look of your image at the shooting stage can help you to become a better photographer. So perhaps it's time you started concentrating on your JPEGs and stopped relying on raw files?

Image size and quality

If you're not relying on raw files to correct any issues on a computer, you need to make sure that you're shooting the best-quality JPEGs you can. With some cameras, such as the Sony A7 III, this may mean that you have to check three settings: the file format, JPEG quality and JPEG size. With Nikon cameras, there are two settings to check in the menu: Image quality (JPEG Fine* is the highest quality) and Image size (use Large). With other cameras, for example, the Olympus OM-D E-M1 Mark II, there's only one parameter to check. Selecting LSF (Large Super Fine) in the file type and quality settings on Shooting Menu 1 ensures that you're going to capture the largest, best-quality JPEGs, but you need to activate this option in Custom Menu G. If you want the safety net of raw files, opt for LF + RAW in the menu.

White balance

You're now ready to think about the best settings for images. Most cameras have a reasonably reliable auto-white balance system, but you'll often get more consistently attractive images if you shoot with a specific white balance setting. Outdoors, for example, the Daylight or Sunny setting is usually a dependable choice. However, keep an eye on the image colour if you move into deep shade or artificial light. While it's worth trying the white balance settings that are intended for those conditions, setting a custom



ALL PICTURES ON PAGES 18-19 © JESSICA DROSSIN

Jessica gets great images straight out of camera, but she also loves to edit and make a statement with her work
Canon EOS 5DS R, 85mm, 1/500sec at f/2, ISO 200

Canon

Jessica Drossin

Jessica is a widely published, self-taught, fine-art photographer based in Los Angeles. She has a Bachelor's Degree in Fine Art, and has worked for video game companies such as Blizzard Entertainment. She has been a professional photographer for eight years now and has received several awards for her images. See **www.jessicadrossin.com.**

Optimising JPEGs is easier when your subject is bathed in soft, even light
Canon EOS 5D Mk III, 85mm, 1/125sec at f/1.2, ISO 100

‘GENERALLY speaking, I shoot in exactly the same way whether I’m capturing JPEG or raw files. I get good photos straight out of camera, but I love to edit. I want to create art and make statements. I make my own actions, overlays and textures, and apply them to my work to change the contrast, enhance the colours and bring out certain details while minimising others. To get the best results with portraits when shooting JPEG, make sure you have soft, even light. Then ensure you understand how to shoot properly in manual mode so you can get the colour, sharpness and exposure you want straight out of the camera. Always consider your lens, your distance from the subject, your subject’s distance from the background and your choice of aperture when setting up a shot. It’s important to select the highest-resolution JPEG setting. Once you’ve started your edit, save the document as a PSD until you have finished. Do not repeatedly save and resave a JPEG image as the compression will begin to noticeably degrade the file.’

‘Make sure you have soft, even light. Then ensure you understand how to shoot properly in manual mode’

white balance value ensures you get things just so. The basic process of setting a custom or manual white balance value is the same, but the mechanics vary a bit from camera to camera. With Olympus cameras, for example, you need to select the white balance control, scroll to one of the custom settings, then press the Info button to access the One Touch WB feature before pointing the camera at a neutral subject, pressing the shutter button and confirming the setting. Canon and Nikon do things the other way around – you shoot the white balance target as normal, then set the custom white balance mode and select the image you want to use for the calibration.

Whichever method you use, once you've done it a couple of times, it takes just a few seconds. It's well worth carrying a grey card or a target like the X-rite ColorChecker Passport. And of course, these can help you get the exposure right as well as the white balance.

Colour options

Next, take a look at the colour options available for your image. These have names such as Film Simulation mode (Fujifilm), Picture Style (Canon), Picture Control (Nikon), Picture Mode (Olympus) and Creative Style (Sony), but there are also usually a selection of filter effects that can be applied.

It's also possible to tailor the impact of the colour modes by adjusting the contrast, sharpness and saturation. Experiment with these so you find the settings that produce results you like. As a rule, the options with Landscape in the name boost greens and blues.

It can be hard to assess how colours translate into black & white, so even if you want to process raw files to create monochrome images, I urge you to shoot in your camera's monochrome mode. It will help you see whether you're on the right track with your composition. It's usually best to increase the contrast a notch or two when you're shooting in monochrome as many cameras produce quite muddy results. Conversely, if you decide to use one of the toning settings, keep the strength of the colour low – less is more.

Aspect ratio

Most cameras give you some control over aspect ratio. Sony is a bit stingy with this on models like the A7 III and A7R III, offering only 3:2 and 16:9, but other manufacturers include options such as 1:1 (square), 5:4 and 4:3. Even 65:24 has started to appear in cameras such as the Panasonic Lumix S1 and S1R.

While many photographers decide on the aspect ratio of their image on their computer, it's too late to improve the composition with a step or two in one direction or the other. If you select the aspect ratio in-camera, you get the chance to assess the composition so you can ensure that objects are correctly aligned within the frame. You'll also develop an understanding of which scenes suit different aspect ratios.

Something to bear in mind is that if you just shoot JPEGs, the only way to switch from square format to 3:2 or 16:9 is to crop the file. If you shoot raw at the same time, you have the chance to 'undo' the aspect ratio crop as the camera captures data from the whole sensor.

© TESNI WARD

Olympus

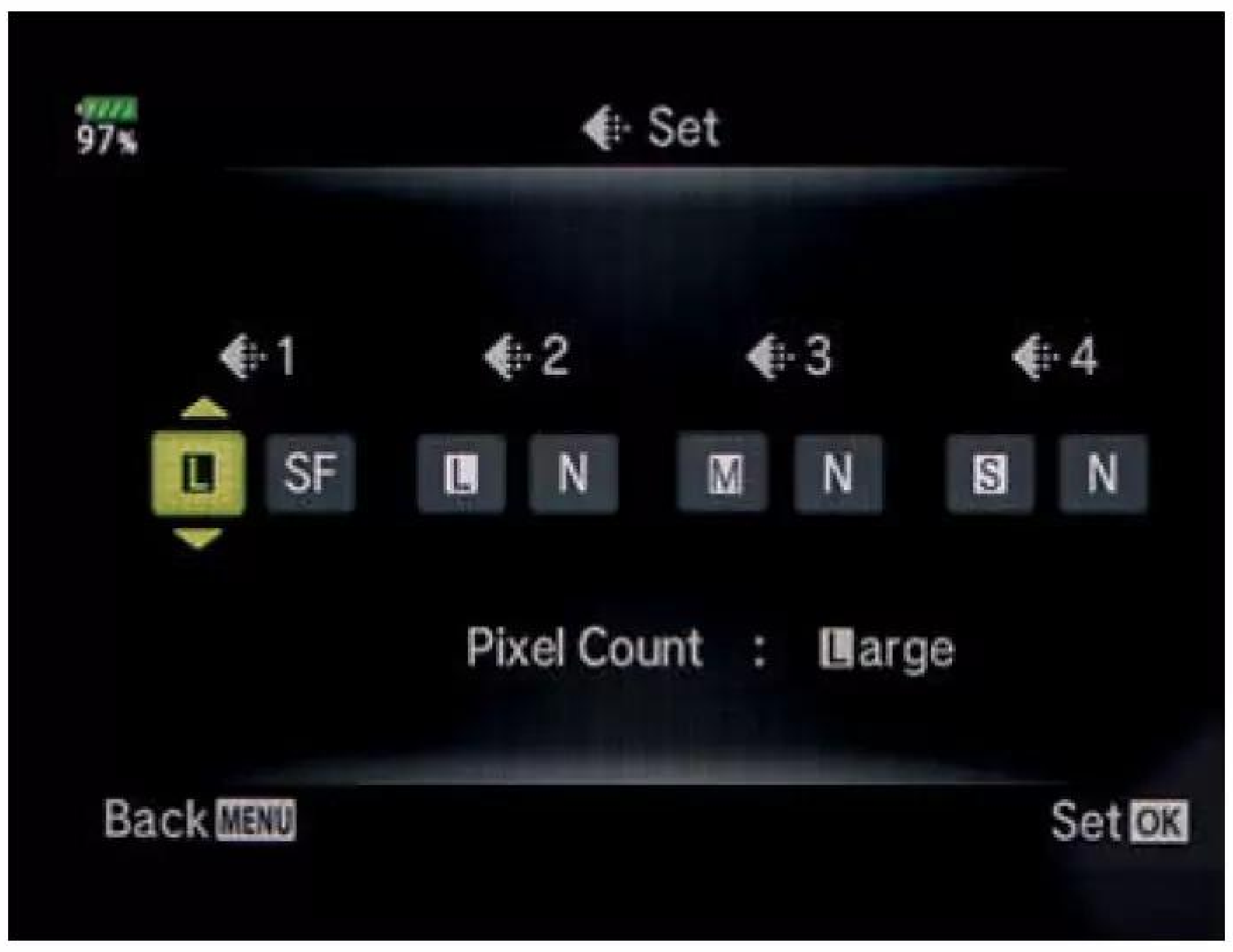
Tesni Ward

Tesni is a professional wildlife photographer based on the outskirts of the Peak District. She mainly focuses on British wildlife, but also photographs projects across the world and has aspirations to promote conservation through her images. See **www.tesniward.co.uk.**

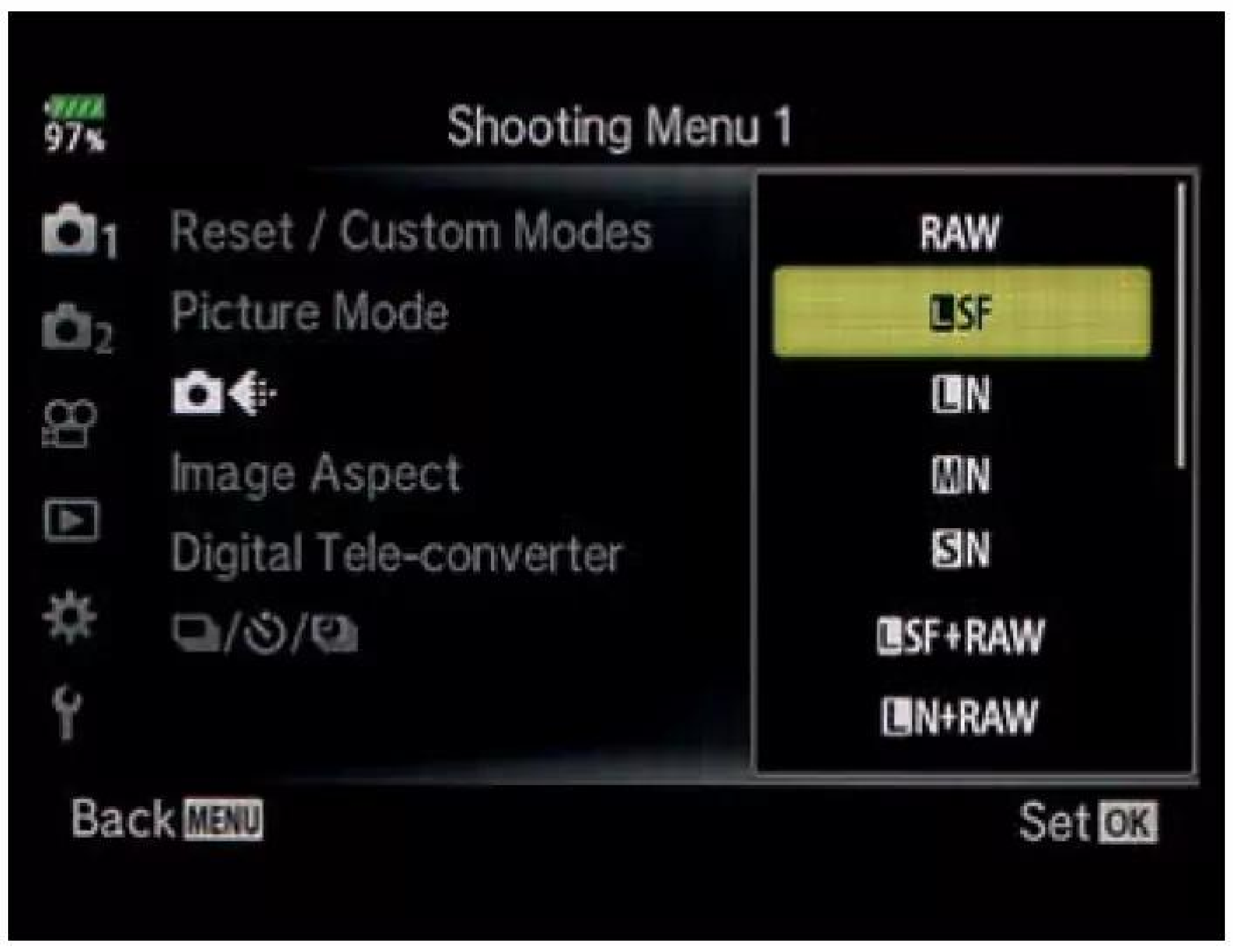
WHILE JPEGs may be a compressed file format with some loss in detail and quality, they are ideal when working on high-volume shoots or as a backup for raw files if images are needed hastily. If I'm working on a commission, for example, I sometimes need to send images immediately after shooting or while still out in the field, giving me no chance to edit or sort my images. In these circumstances, I will shoot raw + JPEG files and transfer the JPEGs immediately to the client.

In order to ensure your Olympus camera produces the highest-quality JPEGs, you need to set it to Superfine JPEG (L-SF). You may need to unlock the Superfine option in the main menu initially by going to the custom menu (Cog menu) > G > Set > Select L - SF. The option to change your file formats is then below your sequential modes on the Super Control Panel or in Shooting Menu 1.

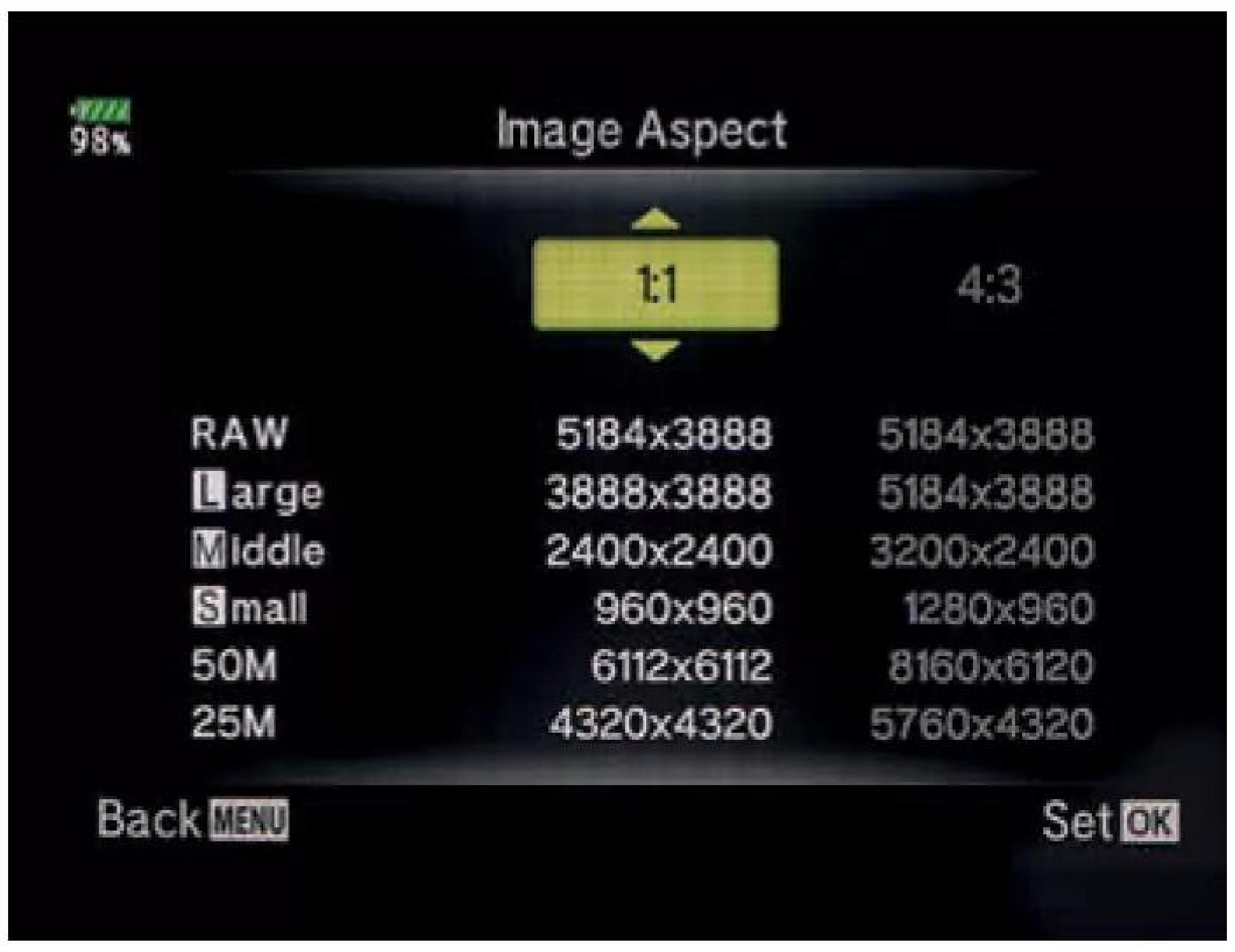
BEST CAMERA SETTINGS FOR JPEG



Using the Olympus OM-D E-M1 Mk II as an example, make sure the highest image quality settings are enabled.



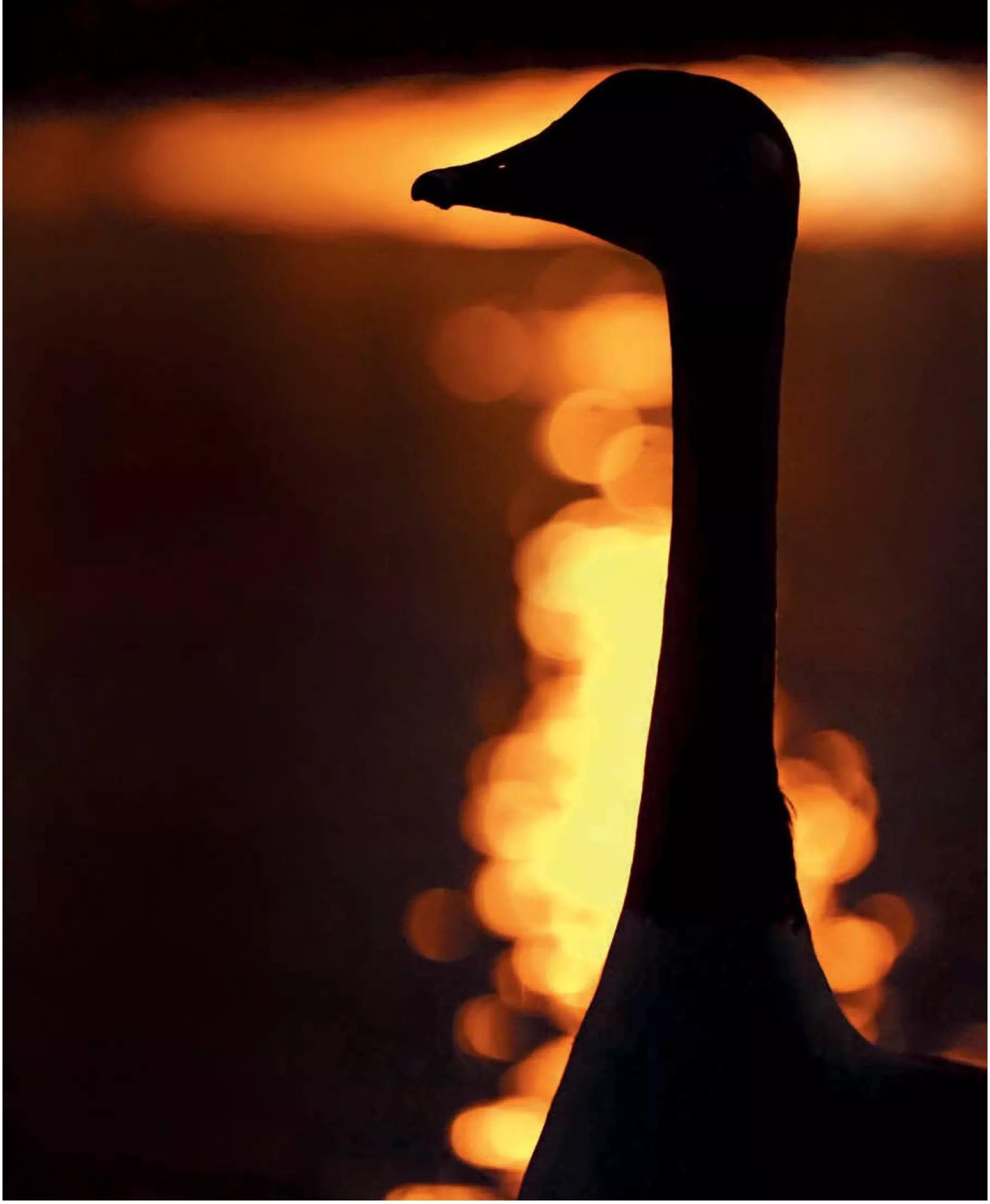
Set the image size to large to ensure that you capture the full resolution of your sensor and use the best quality – Super Fine in this case.



	1:1	4:3
RAW	5184x3888	5184x3888
Large	3888x3888	5184x3888
Middle	2400x2400	3200x2400
Small	960x960	1280x960
50M	6112x6112	8160x6120
25M	4320x4320	5760x4320

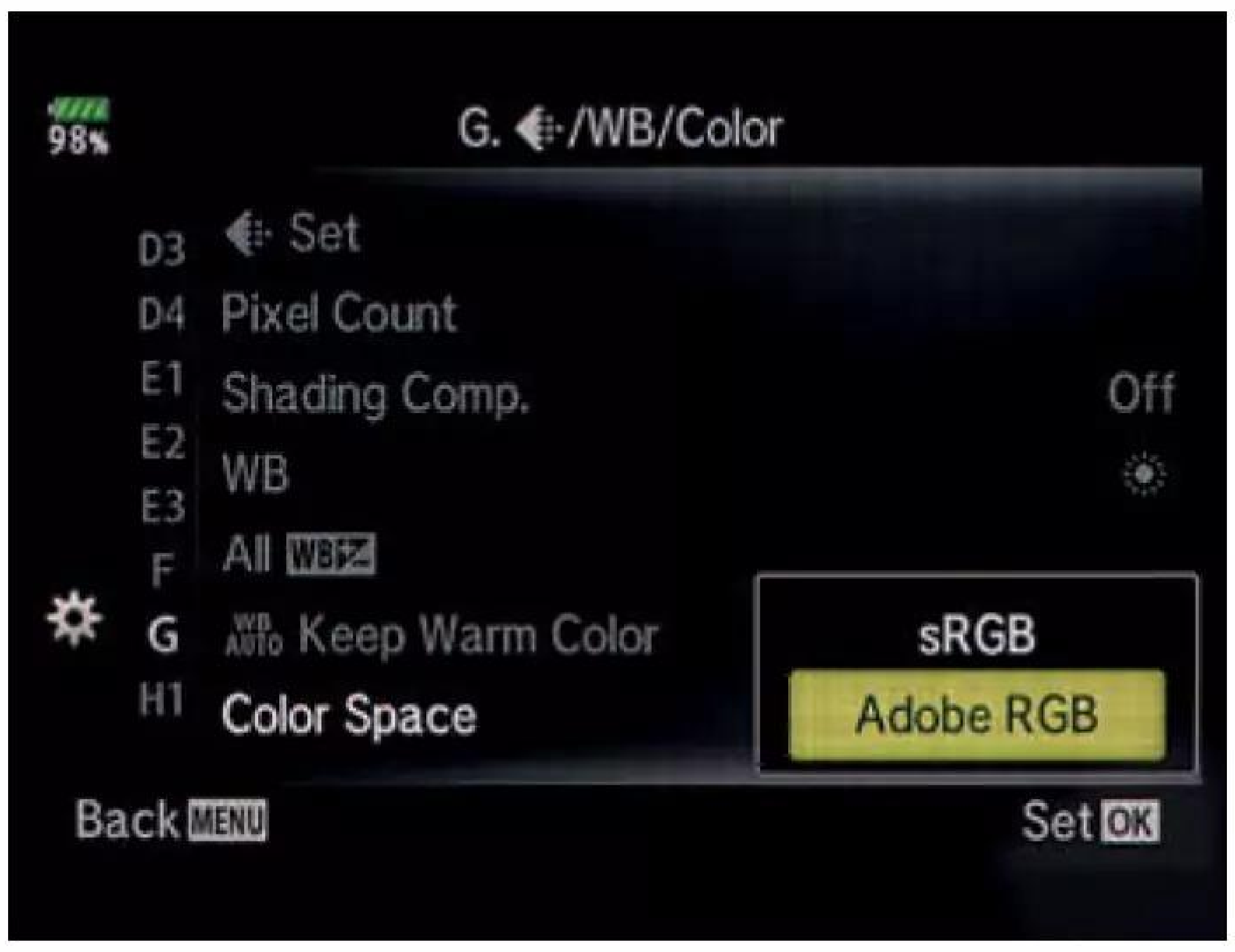
Select the aspect ratio that you want to use for the image. Setting this at the shooting stage helps to perfect the composition.

Above: When Tesni sends images to clients while out in the field, it helps to shoot raw + JPEG
Olympus OM-D E-M1X, 40-150mm, 1/800sec at f/5.6, ISO 1000



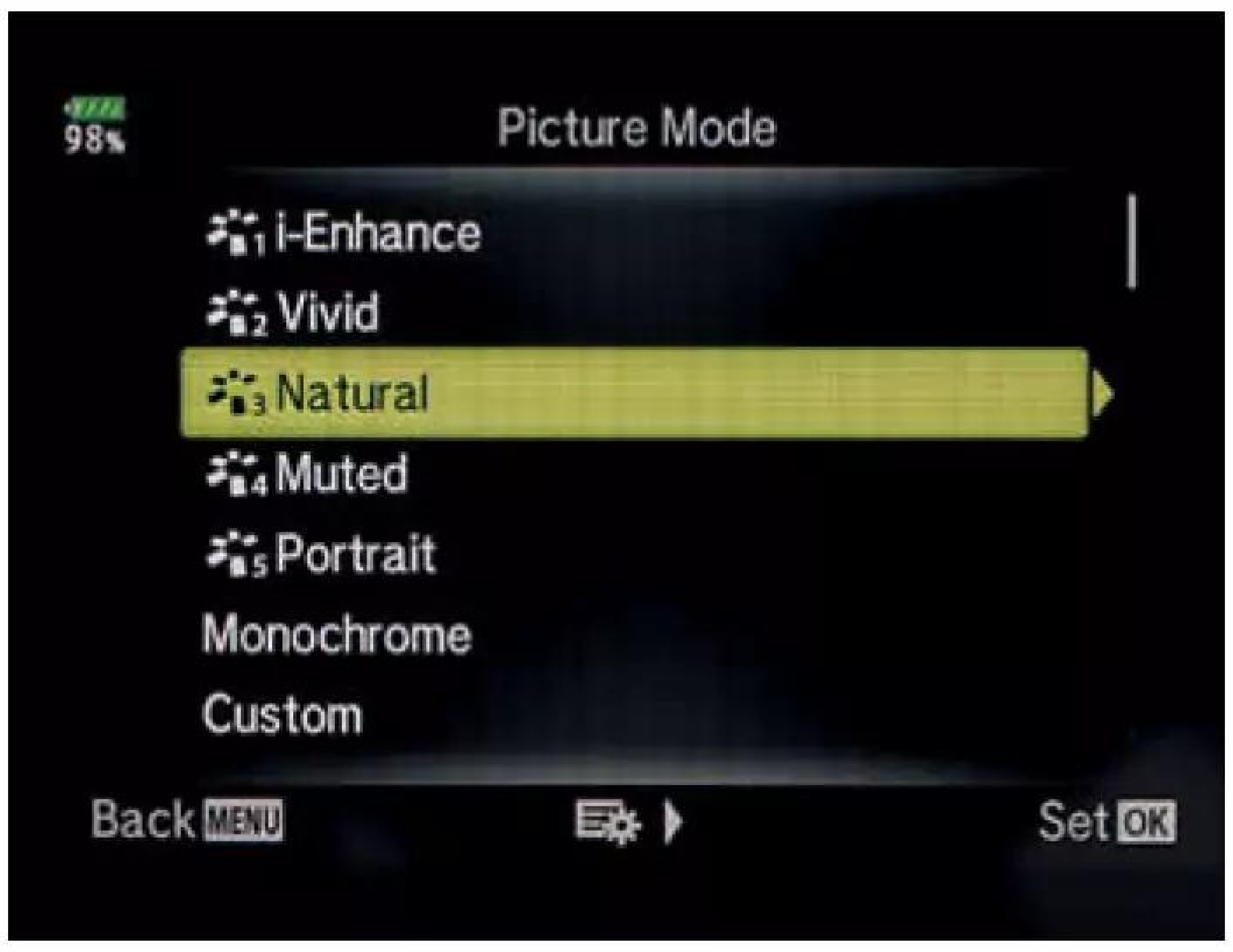
© TESNI WARD

Right: JPEGs are ideal when working on high-volume shoots
Olympus OM-D E-M1X, 40-150mm, 1/13sec at f/2.8, ISO 3200



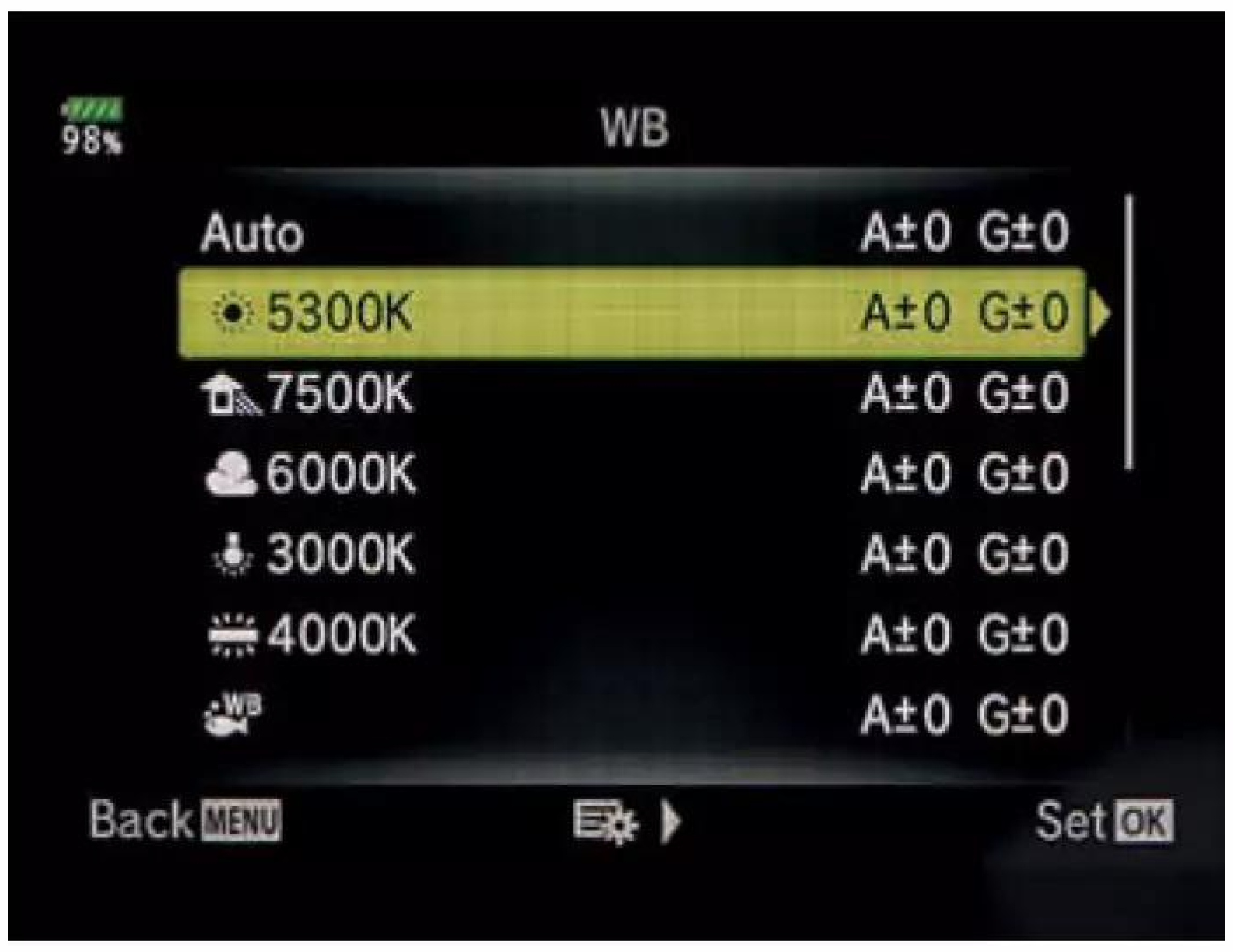
98%
G. ⇦/WB/Color
D3 ⇦ Set
D4 Pixel Count
E1 Shading Comp. Off
E2 WB
E3 All WB
F
G Keep Warm Color
H1 Color Space
sRGB
Adobe RGB
Back MENU
Set OK

Using the Adobe RGB colour space captures the largest and best colour palette available on your camera.



98%
Picture Mode
i-Enhance
Vivid
Natural
Muted
Portrait
Monochrome
Custom
Back MENU
Set OK

Experiment with the Picture Mode options to find the ones you like best and use them to optimise the colour of each image you shoot.



98%
WB

Auto	A±0 G±0
5300K	A±0 G±0
7500K	A±0 G±0
6000K	A±0 G±0
3000K	A±0 G±0
4000K	A±0 G±0
WB	A±0 G±0

Back MENU
Set OK

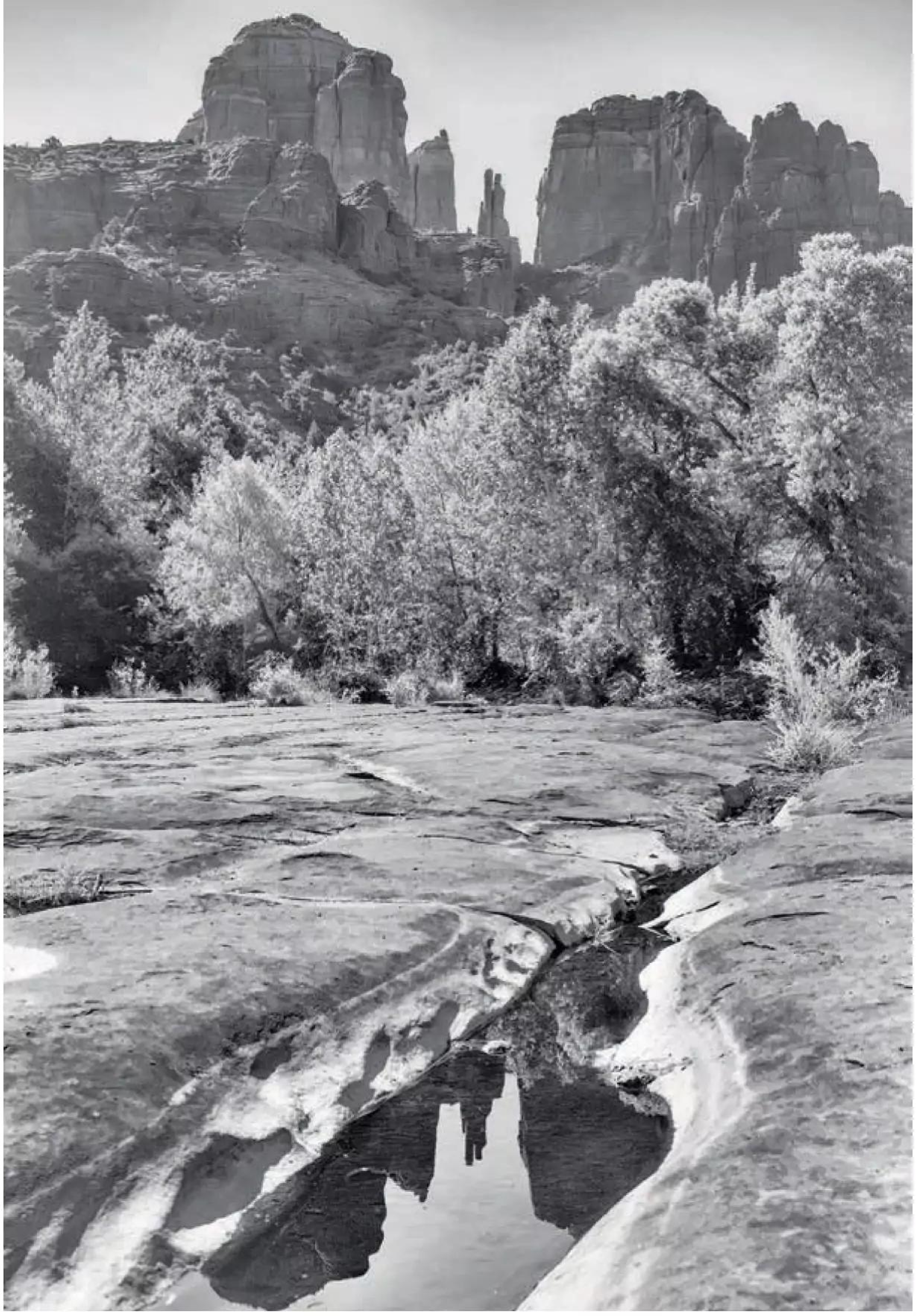
Use the white balance setting most appropriate to the light, or set a custom white balance setting manually.

Panasonic

Jon Bryant

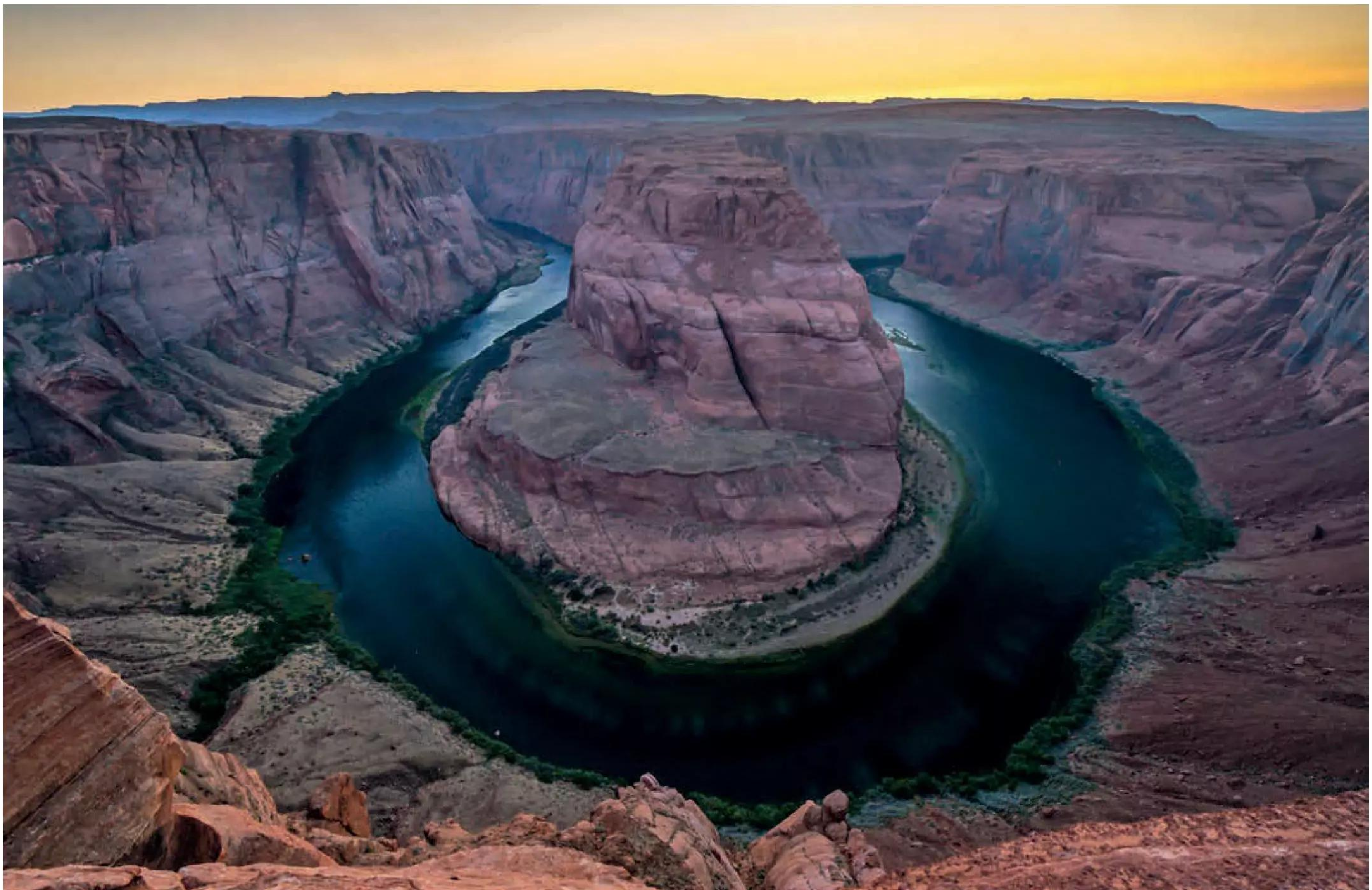
Jon is a wildlife, landscape, and nature photographer, with 20 years of experience. He is passionate about the outdoors and combines his love of landscape with wildlife. See **www.jonbryantphotography.net**, Instagram: **@jonntybryant**, Twitter: **@jonntybryant,** Facebook: **jonbryantphotography.**

THERE are a number of instances when shooting JPEG has advantages over raw. Shooting JPEG creates smaller file sizes. When I am travelling with lots of kit, and maybe without a laptop and hard drive, shooting JPEG means that I can shoot more images on my SD cards. It also frees up the buffer, meaning faster shooting speeds, which is ideal for wildlife. JPEG files have greater compatibility too. Shooting with Panasonic Lumix cameras means I can use the excellent image-transfer app. I can easily transfer and upload JPEGs to social media via my smartphone. Shooting JPEGs also allows me to be creative with black & white images using a custom picture profile. The key to getting great JPEG images is to pay attention to the white balance setting, and to use the picture profile settings to modify contrast, brightness and saturation which can help bring more 'pop' to your images.



Right: Cathedral Rock, Sedona, Arizona, USA
Panasonic Lumix S1R, 24-105mm, 1/100sec at f/9, ISO 100

ALL PICTURES ON PAGE 22 © JON BRYANT



Below: Horseshoe Bend at sunset, Page, Arizona, USA
Panasonic Lumix G9, 8-18mm, 1/8sec at f/5.6, ISO 800

© JEREMY WALKER

Nikon's Active D-Lighting is great for challenging light
Nikon D810, 50mm, 1/6400sec at f/6.3, ISO 400, Nikon Active D-Lighting set at High

Nikon

Jeremy Walker

Jeremy has been producing images for advertising, editorial and design clients for more than 25 years, and is also a highly experienced workshop leader. He has recently started collaborating with Zeiss as one of its brand ambassadors. See **www.jeremywalker.co.uk.**

FIRST and foremost I would have to say that in most cases I would rather be shooting raw files for their quality and the ability to post process the image. Sometimes, however, circumstances dictate a rapid turnaround of images because of tight publishing deadlines, and shooting JPEGs speeds the workflow up no end. Nikon's Active D-Lighting can handle the most difficult of lighting situations, controlling the highlights and shadows effortlessly. Adjustable settings range from Low right through to Extra High and Auto. A great piece of technology and image control when time is of the essence.

I have also found that Nikon's out-of-camera black & white JPEGs are very good. Sometimes I have failed to match the look and feel of a Nikon in-camera generated black & white when I've processed the corresponding raw file myself. Image sharpening, Clarity, Contrast and Brightness are all adjustable in camera, as are some coloured Filter Effects.

© JEREMY WALKER

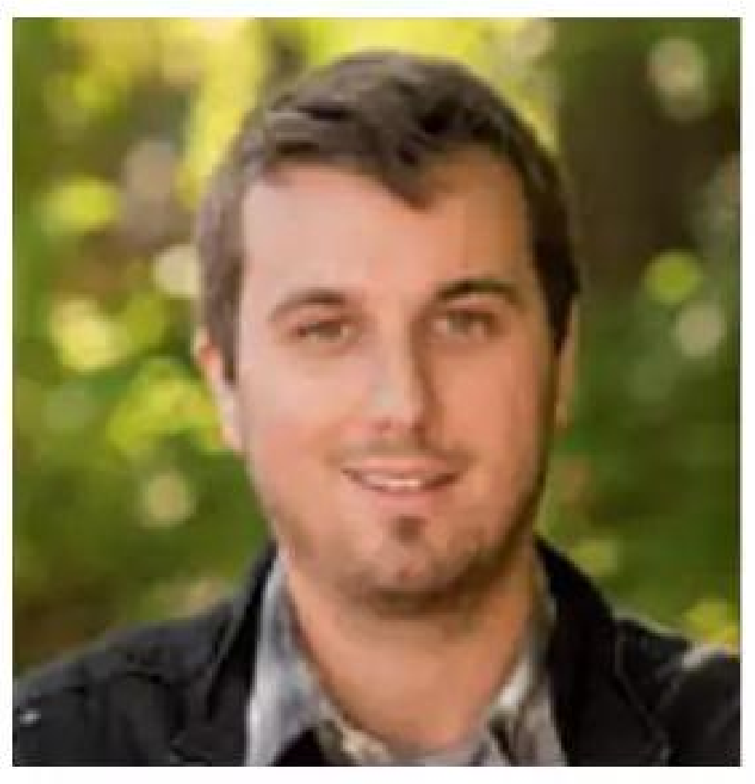
Nikon's out-of-camera black & white JPEGs are excellent
Nikon D2X, 24-70mm, 1/160sec at f/13, ISO 100

© ERIC BRUSHETT

Using both card slots means Eric can save raw and JPEG files, editing as appropriate Fujifilm X-T1, 23mm, 1/140sec at f/1.4, ISO 6400, backlit by a Lowell GL-1

Fujifilm and Sony

Eric Brushett



Eric is a full-time wedding photographer based 90 minutes outside of New York City. He has been shooting weddings for about 10 years, often with his wife Corey as a second shooter. Together they have photographed about 400 weddings. See **www.photographyEB.com**, Instagram: **@ericbrushett photography**, YouTube: **Eric Brushett Photography.**

A FEW years ago I started experimenting with shooting weddings in JPEG. I shoot a mix of Fujifilm and Sony equipment, but my process is the same for both. I record raw files to slot 1, and JPEGs to slot 2. I edit off the JPEGs, but keep the raw files in case I need to push an image further than the JPEGs will allow. I've found that paying attention to composition and using custom white balance throughout the day has cut my editing time down from about 20 hours per wedding to roughly five. The other benefit is data usage. I can shoot an entire wedding without switching cards, and when I get home I send all the high-resolution JPEGs into the cloud.

© ERIC BRUSHETT

Shooting JPEGs cuts down Eric's editing time and allows him to save to the cloud quickly Sony Alpha 9, 85mm, 1/250sec at f/1.8, ISO 1600

James Abbott
James is a landscape and portrait photographer based in Cambridge. He's also a freelance photography journalist and editor specialising in photography techniques, tutorials and reviews. If you can think of a subject, he's probably photographed it. See more of his work at **www.jamesaphoto.co.uk**

Take full control

Modern cameras are very clever but sometimes manual exposure, focusing and flash is still the best option. **James Abbott** gives a manual masterclass

Modern cameras are amazing. Fast autofocus, intelligent metering systems, excellent ISO response and high resolutions are just a few of the things that make photography better than ever. But even with all this, cameras remain crude compared to the capabilities of the human eye, and there are times when taking full control of exposure and focusing are essential.

There's a certain amount of reverence attached to shooting in manual: it seems difficult, but won't it make me look more professional? The reality is that shooting and focusing in manual is easy, and it's simply another option alongside the semi-automatic shooting modes and autofocus. There are times when it's the only option, and times when it's the worst. The key to success is identifying these situations and switching to the best route possible.

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Exposure

Q How do you use the viewfinder and LCD exposure meters?

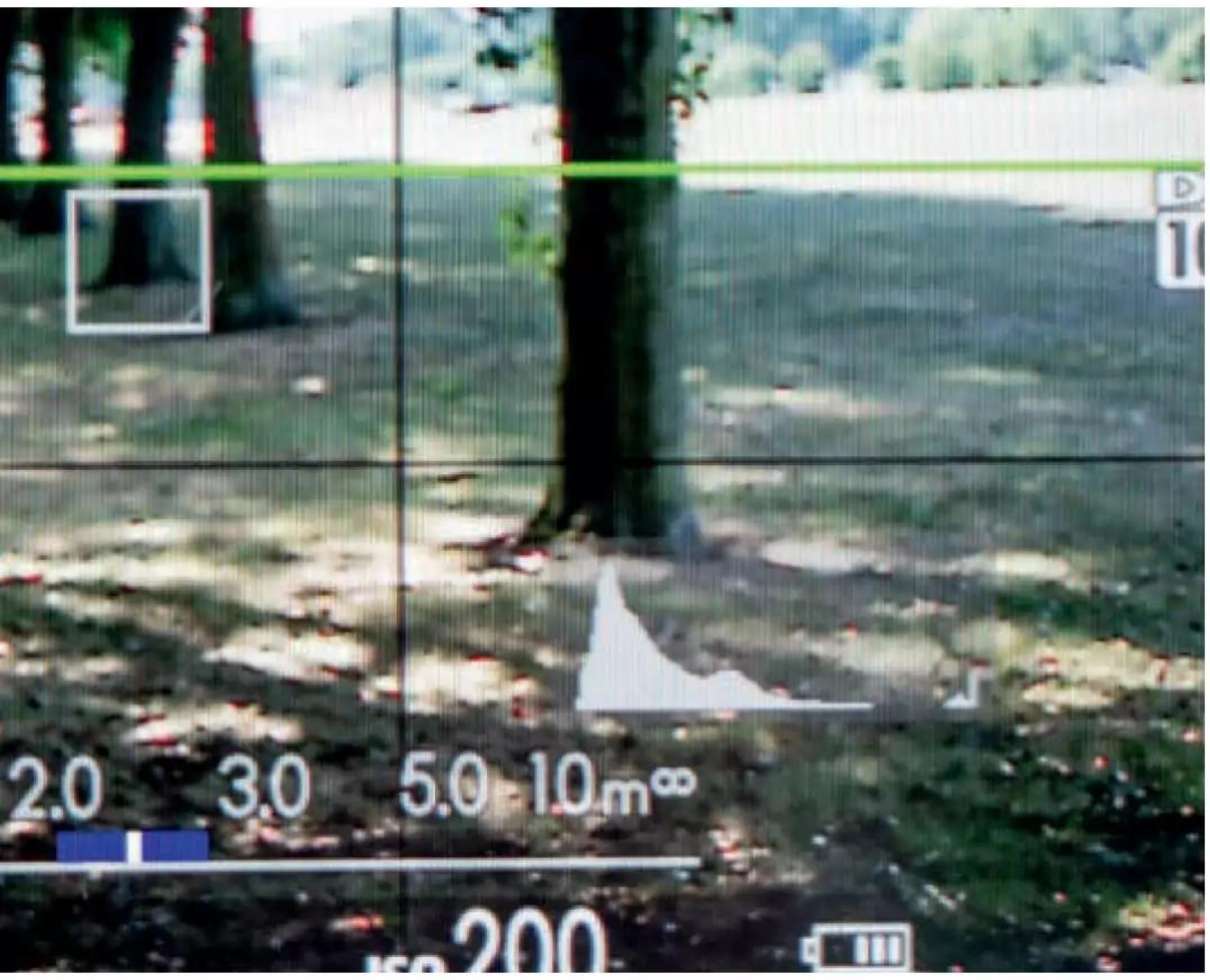
A When shooting in manual you have to use the exposure meter to assess exposure. The exposure meter is a scale that's usually found at the bottom of the viewfinder and the LCD screen on the back of the camera. At a basic level, when a correct exposure has been obtained an arrow will show above the central part of the scale which may be signified by zero. Any underexposure will show the arrow to the left of the central area, where the scale will say -1, -2 or -3. For overexposure the arrow will show on the right with +1, +2, +3. There are 1/3 stop increments between these values, and it's worth noting that a zero exposure isn't necessarily correct. You may need to over- or underexpose the shot as required.

Q How can the camera's histogram help with exposure?

A The histogram shows whether you've blown highlights or lost shadows. On DSLRs it will show on the LCD, while mirrorless cameras can display a live histogram in the viewfinder and the LCD. The histogram graph represents shadows on the left, mid-tones in the central area and highlights on the right. Ensure the graph doesn't touch the left or right edges of the histogram, as this means shadows and highlights, respectively, have been lost.

When and why would you pick manual over other shooting modes?

A Once upon a time manual shooting was the only option, but as cameras became more intelligent they began to take more of the legwork out of shooting. Despite this impressive automation, there are times when manual exposure allows you to lock camera settings for more reliable results. When shooting in the studio or with off-camera flash it's best to shoot in manual mode to avoid under and overexposure. When shooting with a Big Stopper you'll often need to shoot in Bulb mode which requires manual timing of exposure. In difficult lighting scenarios, such as when shooting contre-jour or live music, manual mode is a winner.



Is shooting in manual mode 'more professional' than the other modes?

A There's a common misconception that all professionals shoot in manual mode. The reality is that most professional photographers will shoot in manual, shutter- and aperture-priority modes depending on the situation. Being able to successfully shoot using these three main shooting modes will provide confidence and competence in all situations.

What's the difference between manual and semi-automatic modes?

A In manual mode, you control all aspects of exposure including ISO, aperture and shutter speed. In this mode, you would typically change the shutter speed for a correct exposure using the in-camera exposure meter. In aperture-priority, you set ISO and aperture while the camera will select the most appropriate shutter speed based on light metering. For shutter-priority, you set ISO and shutter speed while the camera takes care of the aperture. In these two modes you may have to use exposure compensation to override the exposure set by the camera.

Focusing

THERE'S a time and a place for everything, and when it comes to focusing, knowing when to switch between auto and manual focus is just as important as knowing when to shoot at a wide aperture of f/1.4 or narrow aperture of f/11. Focusing is something we often take for granted because in most situations, pin-sharpness is a shutter button press away – but it's not 100% perfect and there are times when it can't perform.

The main reasons for needing to switch to manual focus are simply when the autofocus fails in some way, such as failing to lock onto a subject due to the surrounding conditions, low-light levels, or when using AF produces unreliable or inconsistent results. So it's best to lock focus while a number of shots are taken.

200
135
100
70
M/A
M
Nikon
ED
AF-S NIKKOR 70-300mm 1:4.5-5.6 G
VR

Q What's zone focusing and why would you use it?

A Zone focusing is great for street photography as it allows you to work quickly and even shoot from the hip without worrying about focusing. It's basically where you decide on the depth of focus you wish to have, such as between 2 and 5 metres. By setting the focus manually at say 2.5 metres with the aperture at f/8, everything in that range should be in focus. One thing to keep an eye on is the shutter speed, and raise the ISO if shutter speed is too slow. Alternatively, use Auto ISO.

Prefocusing is a valuable technique when autofocus fails to capture the action

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Q What's prefocusing and is it still relevant today?

A Prefocusing is a technique that was originally used when shooting fast-moving subjects with a manual focus (only) lens back in the days of film. For this, you simply focus at the point where you know the subject will pass and then compose the image. When the subject passes over the prefocused point you simply take the shot, and most of the time the subject will be in sharp focus. Modern autofocus can be extremely fast, and there are very few action photography situations where they fail, but when they do prefocusing can be an invaluable technique to have up your sleeve.

Q What are the different manual focusing techniques?

A To focus manually you generally rotate the focus ring on the lens until the image in the viewfinder or on the LCD appears sharp, but there's another technique unique to macro photography that can be applied when shooting both handheld or when using a focusing plate.

Simply manually focus the macro lens so that it's at its minimum focusing distance and able to capture subjects at a 1:1 ratio. Now attach the camera to the focusing plate and the plate to a tripod. Once the camera is positioned close to the subject you can turn a dial on the plate that will move the camera backwards or forwards until the image appears sharp and in focus.

Once you've focused using AF, switch to manual to lock focus

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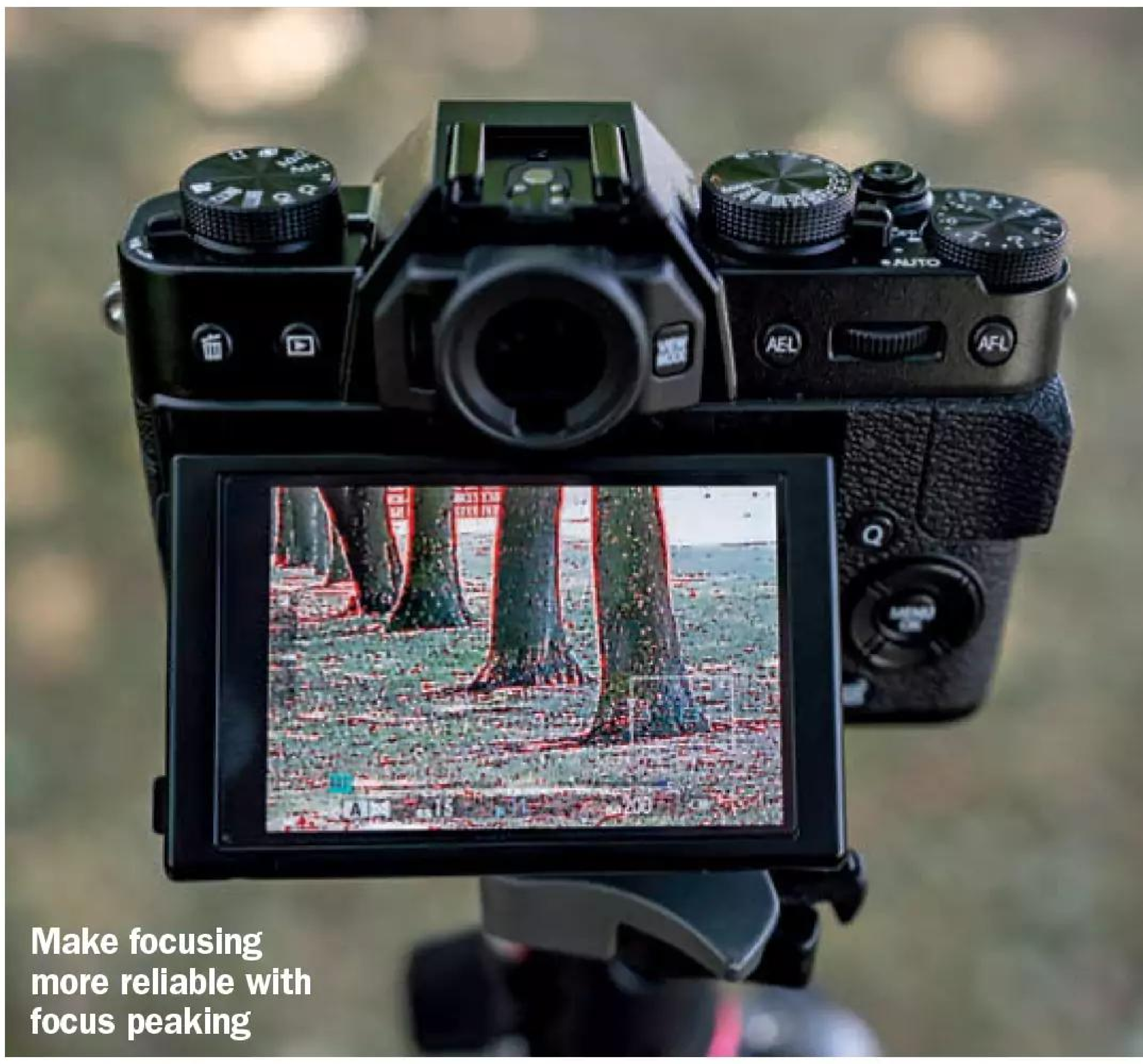
Q When and why should you use manual focus?

A We've already briefly covered why you'd switch to manual focus but sometimes AF and manual focus can be used in conjunction, where you use AF to focus on a subject but then switch to manual focus once AF has locked on to keep it fixed at the desired point. This technique can be particularly useful when shooting HDR – to maintain consistent focus from one exposure to the next – or when shooting with a Big Stopper where you focus before the filter is attached and lock it in position using manual focus to avoid AF hunting. A few cameras can autofocus through extreme NDs.

Q Is there a way to increase the reliability of manual focusing?

A When manually focusing almost any subject, one of the best things you can do for precision is to zoom into the image on the camera LCD screen using the zoom buttons on the back of the camera. If you're shooting with a mirrorless camera you can also do this in the viewfinder, which can be useful in bright conditions. Another useful setting is to turn on focus peaking. This is where the parts of a scene that are in focus will be highlighted red or white, and this can be used in conjunction with zooming into the image if you wish.



Make focusing more reliable with focus peaking

Flash

IF YOU want to master flash photography, you need to get to grips with setting flash power output manually. After using TTL flash, doing everything yourself may seem daunting, but manual flash is about consistency and control in difficult interiors and outdoors. It lets you use the exact settings you desire and/or to achieve special effects without the risk of the camera exposing a scene in a way it thinks is correct, rather than what you wish to achieve.

To make use of your flashgun's full potential, get to grips with its manual settings

Q Why would you use manual adjustments on a flashgun?

A With the camera and the flashgun in manual mode, you will have full control. Know that aperture controls flash exposure while shutter speed takes care of ambient light, and you can't go wrong. You can even combine semi-automatic shooting modes with manual flash, or manual mode with TTL flash – the options are endless.

Q How do you manually control your flashgun?

A With manual flash, you generally set the camera up first with the desired settings in manual mode. This might be ISO 100 at f/8 with a shutter speed of 1/200sec. Set the flashgun to manual power output and start with the power at 1/4. You can then increase or decrease the output as required to obtain a correct exposure. You're also able to stop down to f/11 or open the aperture up to f/5.6, too.

Another setting you may have on your flashgun is a manual zoom control. This is simply the zoom function the camera uses when different lenses are attached to help focus the light on the subject. When using modifiers such as softboxes, setting the zoom to 24mm spreads the light well, while if you're using a bare flashgun as a hair or rim light you may find setting zoom to 105mm is more beneficial.

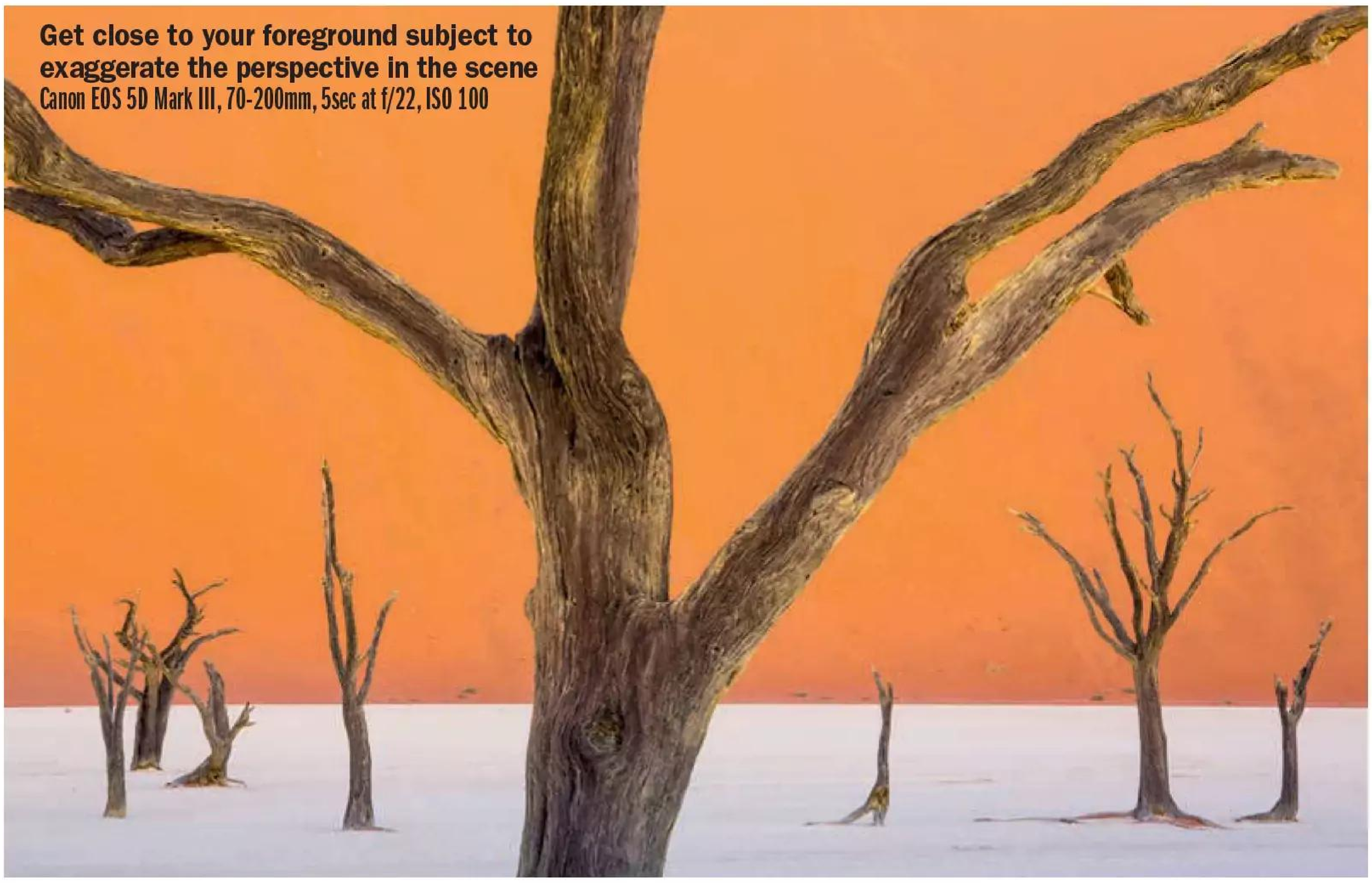
Combine manual camera settings with TTL flash

Q Can you mix manual camera settings and TTL flash?

A A great way to push ambient exposure and flash output is to shoot with the camera in manual mode and the flashgun in TTL mode. This can be highly effective when shooting weddings, for instance, where there is a high ceiling and a lot of contrast. Setting the camera to ISO 400 at f/5.6 and 1/60sec and flash set to TTL and positioned to bounce off the ceiling, may save the day when the mix of flash and ambient light is difficult to balance.

It's best to go manual when using flash off camera, especially with non-dedicated lighting

© GETTY IMAGES/JONATHAN KNOWLES



Get close to your foreground subject to exaggerate the perspective in the scene
Canon EOS 5D Mark III, 70-200mm, 5sec at f/22, ISO 100

Compelling compositions

However strong your subject, your images stand or fall by the quality of the compositions. **Ian Plant** shares some tips for framing with impact

What makes a great photograph? Many candidates immediately spring to mind, such as subject matter, light, mood and moment. In my opinion, however, one aspect clearly rises above the rest, and that is composition: the visual design of your photograph. Composition is your way of communicating your artistic vision to others, commanding the viewer's eye and directing it to what is important. A snapshot shows the world what your camera sees, but when you create a composition, you show the world what you see. In this article, I will explain how to make compelling visual designs that get noticed.

Learn to think in the abstract

The key to successful composition is abstract thinking, which involves learning to see everyday elements not for what they are (i.e. trees, clouds, mountains, etc.) but for what else they are – shapes and colours and visual energy. In particular, you must learn to recognise and establish dynamic visual relationships between shapes (also known as forms). Shapes fill the space within the image frame, and are the building blocks of image design, the foundation upon which a composition is built. Our world contains a seemingly never-ending array of shapes, such as lines, curves, triangles, squares, spirals, rectangles, and circles. Training yourself to notice these shapes around you – and, more critically, finding ways to make shapes work together – is fundamentally important to mastering composition.

Pick great subjects

I don't mean that you should only shoot subjects that are beautiful, majestic or awe-inspiring, but look for subjects that are meaningful and unique. Try to tell your subject's story by including visual elements that reveal something special. Critical to picking the best subjects are research and scouting. Before every shoot, I spend time researching my subject, and when in the field, I don't just wait for

ALL PICTURES © IAN PLANT

Torres del Paine National Park, Chile
Canon EOS 5D Mark III, 11-24mm, 0.4sec at f/11, ISO 100

Ian Plant

World-renowned professional photographer Ian Plant travels the globe, seeking out amazing places and subjects in his never-ending quest to capture the beauty of our world with his camera. Ian is a frequent contributor to many leading photo magazines, a Tamron Image Master, and the author of numerous books and instructional videos, including the critically acclaimed *Visual Flow: Mastering the Art of Composition*. You can see more of his work on his website **www.ianplant.com**

Why it works

◀ This image demonstrates the concept of 'dynamic balance'. Too much energy in a composition leads to chaos, while too much balance makes a composition static and boring: a mix of the two is best. The general background structure of the composition is roughly symmetrical from left to right (most notably, I centred the background mountain range, leaving equal room on both sides from the edge of the image frame), creating order and balance. But the dynamic, curving shapes of the wave and the cloud break the symmetry, adding energy to the visual design. The result is a composition that is both pleasingly balanced and dynamic at the same time – a compromise between two extremes that works to effectively engage the viewer's eye.

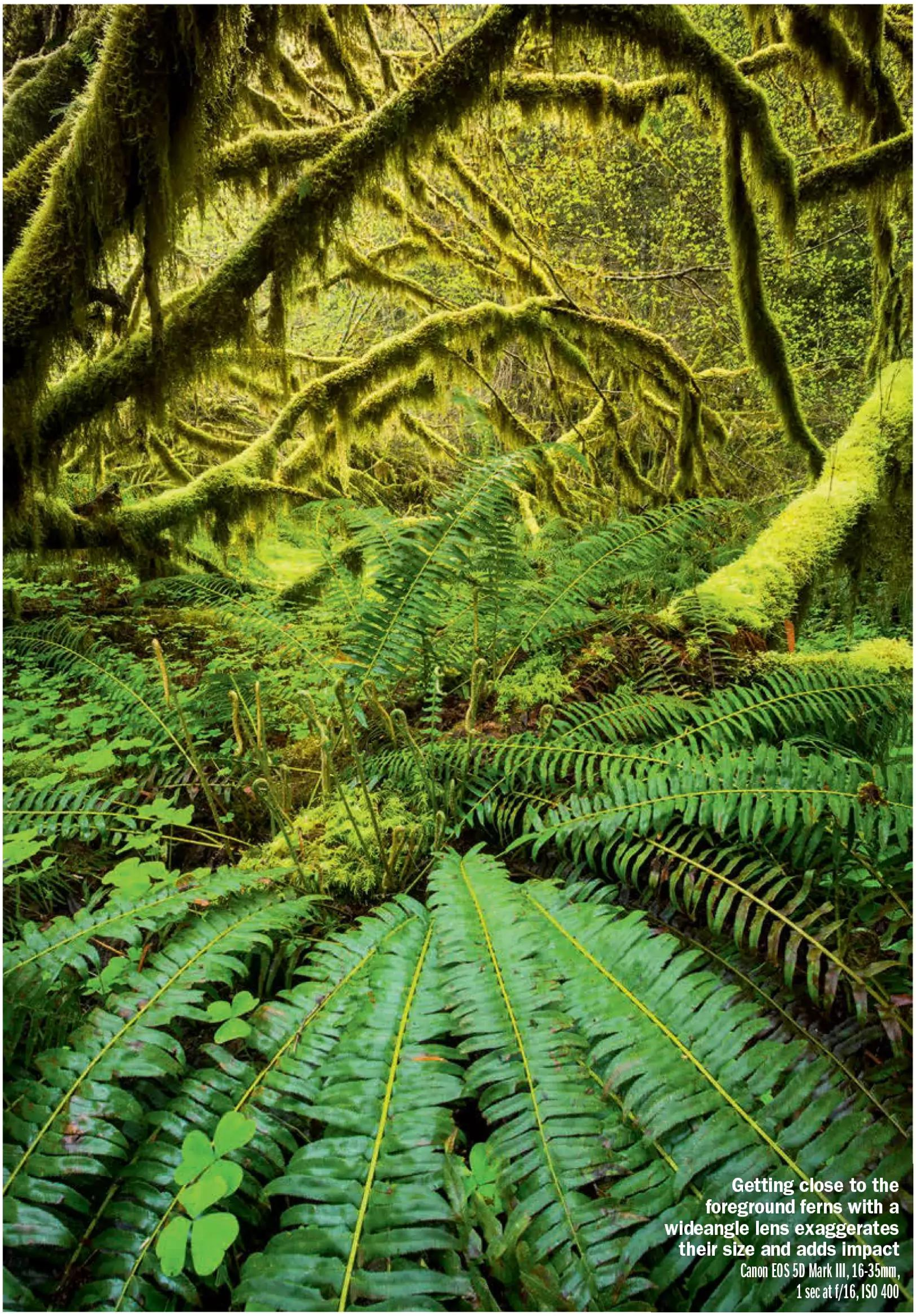
something good to fall from the sky into my lap; instead, I get out and explore, looking for amazing compositions. Only then can you really see what the world has to offer.

Move your feet

Ansel Adams once said, 'A good photograph is knowing where to stand.' Good advice. If you want to make compelling compositions, you need to get your feet moving and to experiment with different angles, focal lengths, and positions. Picking great subjects is only the beginning; your next job is to find the best position for your camera to allow you to make the most of your chosen subject. One thing to remember as you assess various angles is that, unlike human vision, which sees the world in three dimensions, a photograph is only two-dimensional. This means that you should seek out a position that allows the objects in your composition to have visual separation. If objects are bunched up they will appear to merge, in a two-dimensional photograph, so diminishing the impact of your composition.

Think about visual mass

The ability of an object to attract attention – its 'eye-catchingness', if you will – is known as visual mass. Something big within the image frame will likely attract more attention than something small, but keep in mind that visual mass is not simply dictated by the relative size of an object; colour, brightness, shape and other things can give an object visual mass out of proportion to its physical size. Also, visual mass is not static; rather, the photographer can manipulate the visual mass of an object through lens choice, camera position and the use of light. For example, by getting closer to an object, the photographer can increase its apparent size relative to other objects within the scene (or, by using a wideangle lens, the photographer can make background objects look smaller). Visual mass is critical to understand because it can be used to focus the viewer's attention on specific parts of your composition, so learning how to manipulate visual mass allows you to emphasise those objects that are most important to your visual design.

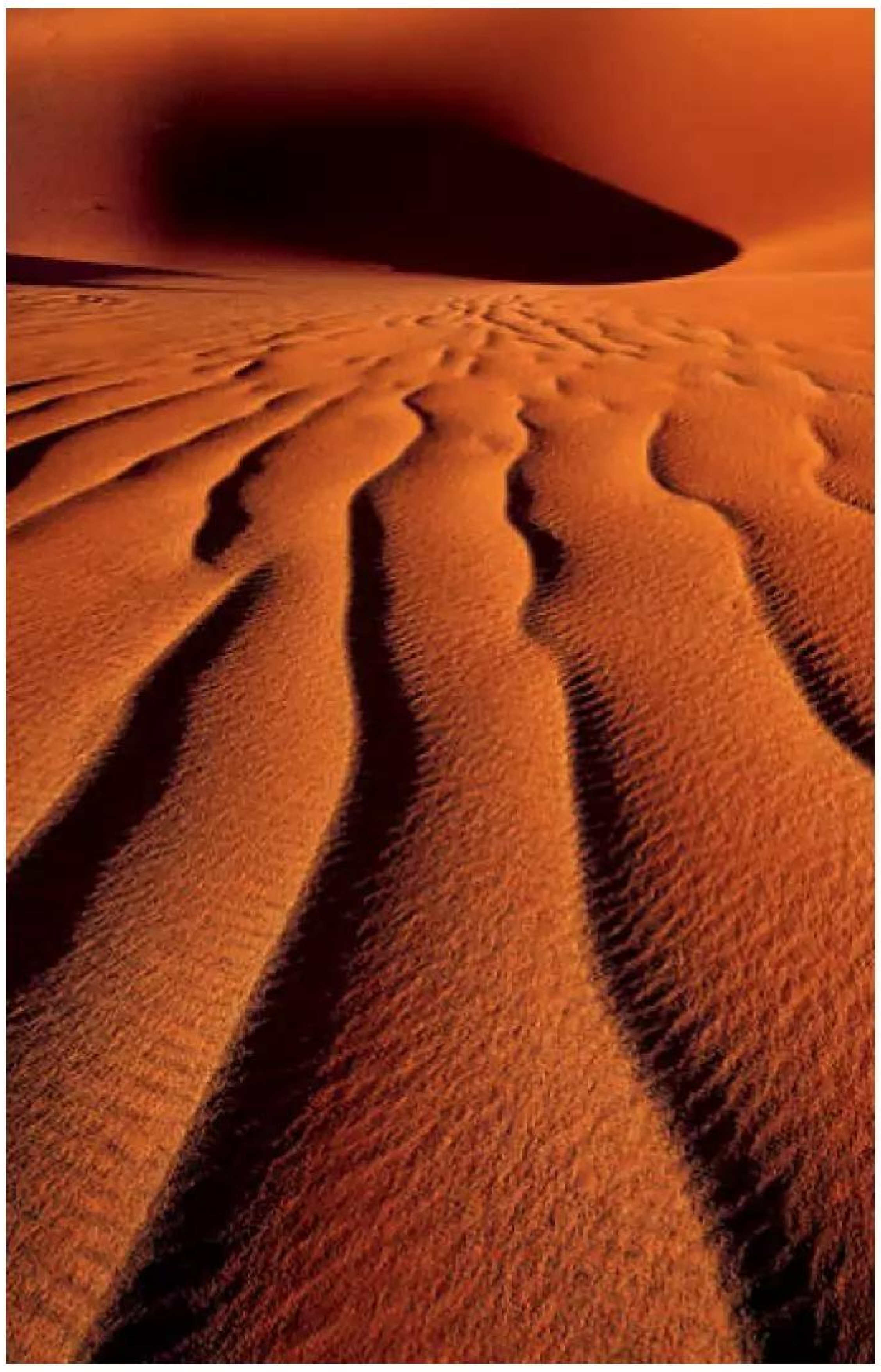

Getting close to the foreground ferns with a wideangle lens exaggerates their size and adds impact
Canon EOS 5D Mark III, 16-35mm, 1 sec at f/16, ISO 400

Entice the viewer into the scene

Good compositions enthral the viewer and hold their interest. I call this effect 'visual flow', and it is helpful to think of it this way: imagine you are standing in the middle of a river, looking downstream. The water flows around, beneath and past you on its journey into the distant landscape beyond. The flow of the river is irresistible – anything caught in its path is swept along, following every twist and turn, inevitably transported into the distance. This effect – this irresistible pull – is precisely what you want to accomplish

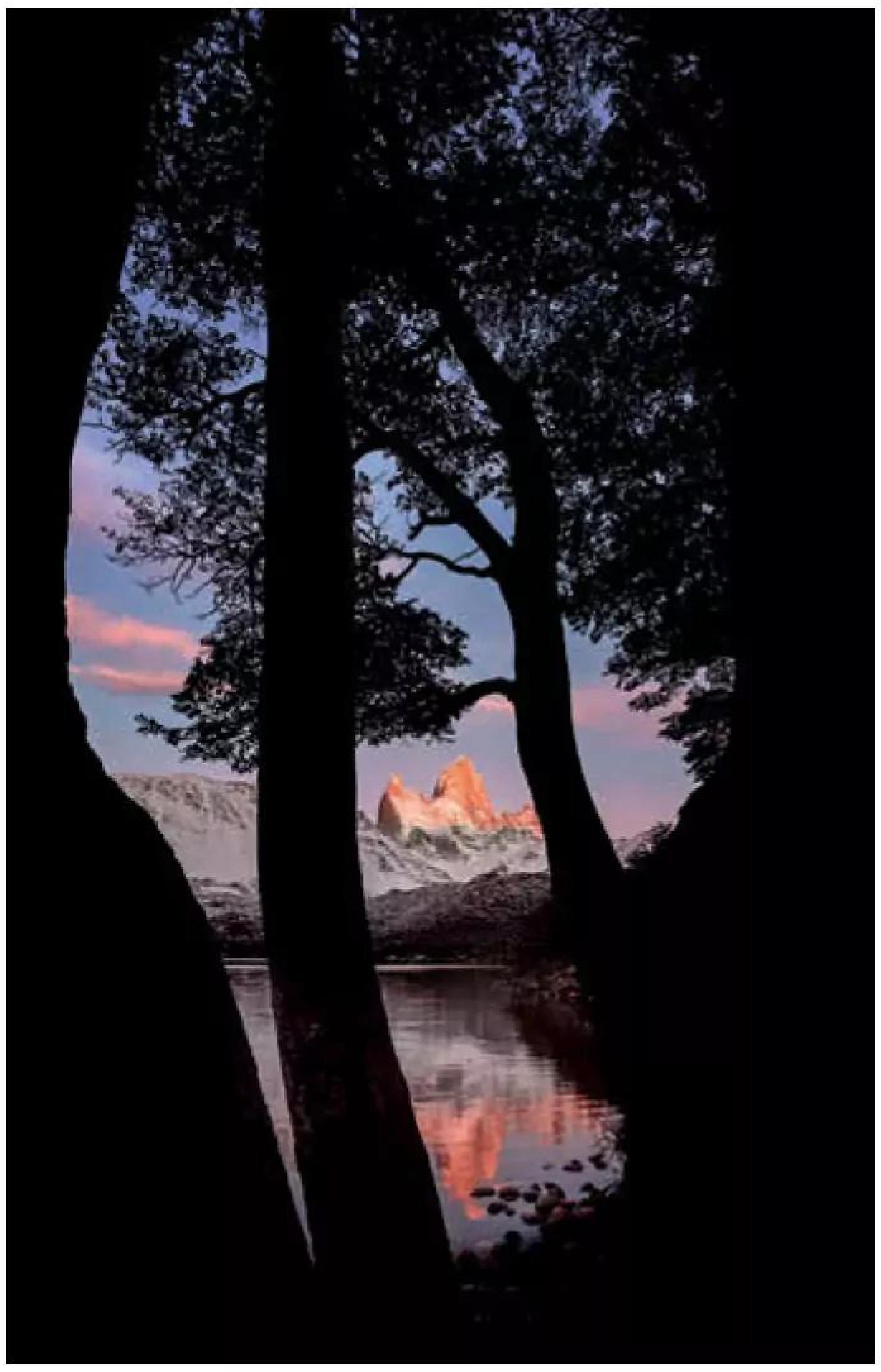
IAN'S FAVOURITE COMPOSITIONAL STYLES

There are a number of ways to draw the eye into a scene and add impact for an unforgettable image



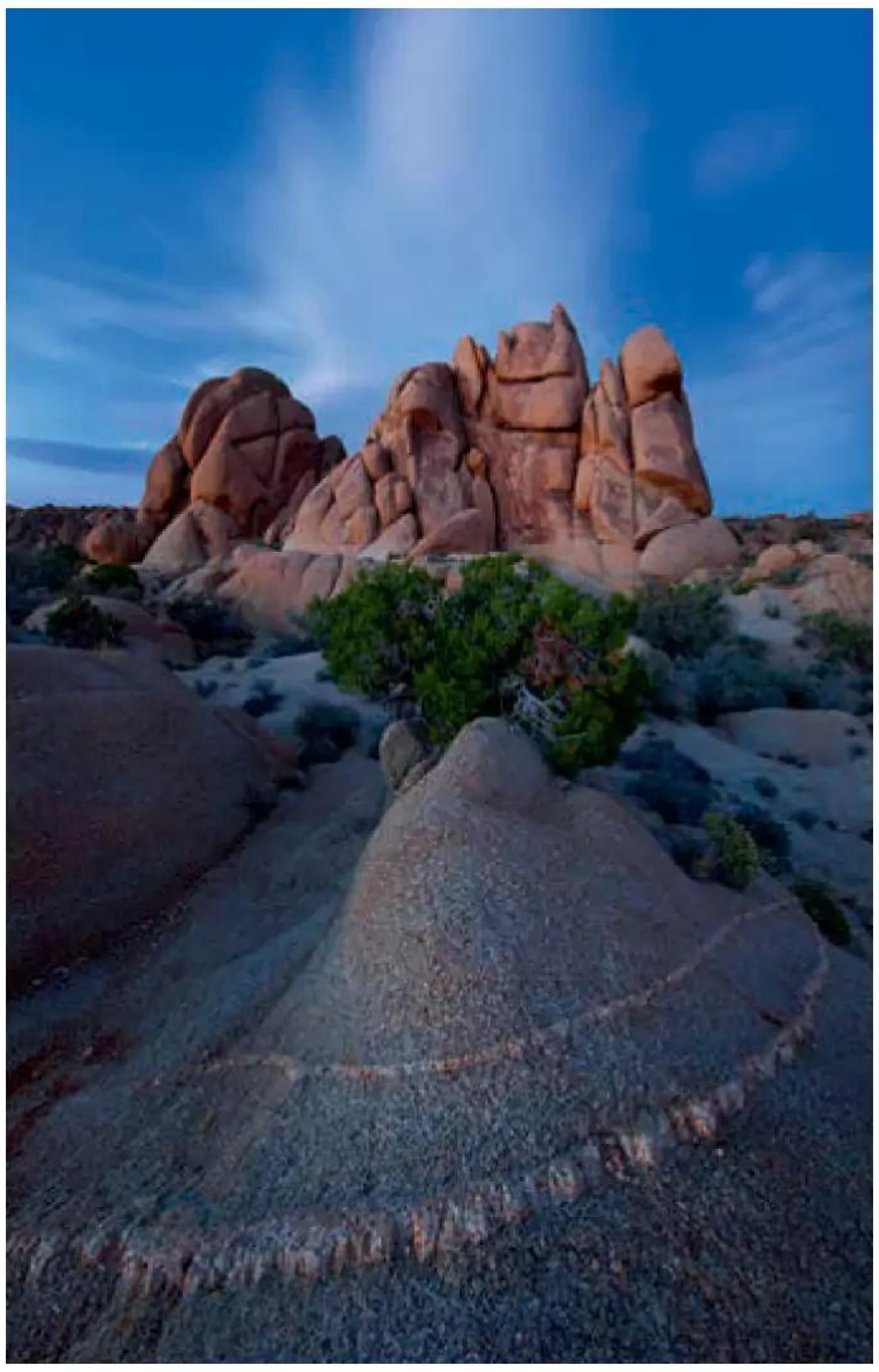
Leading lines

Lines stretching from foreground to background propel the viewer's eye deeper into the photo. When the lines emanate from the bottom of the image frame and point to important elements in the background, they can be very effective at grabbing the viewer's attention and leading the eye into the composition.



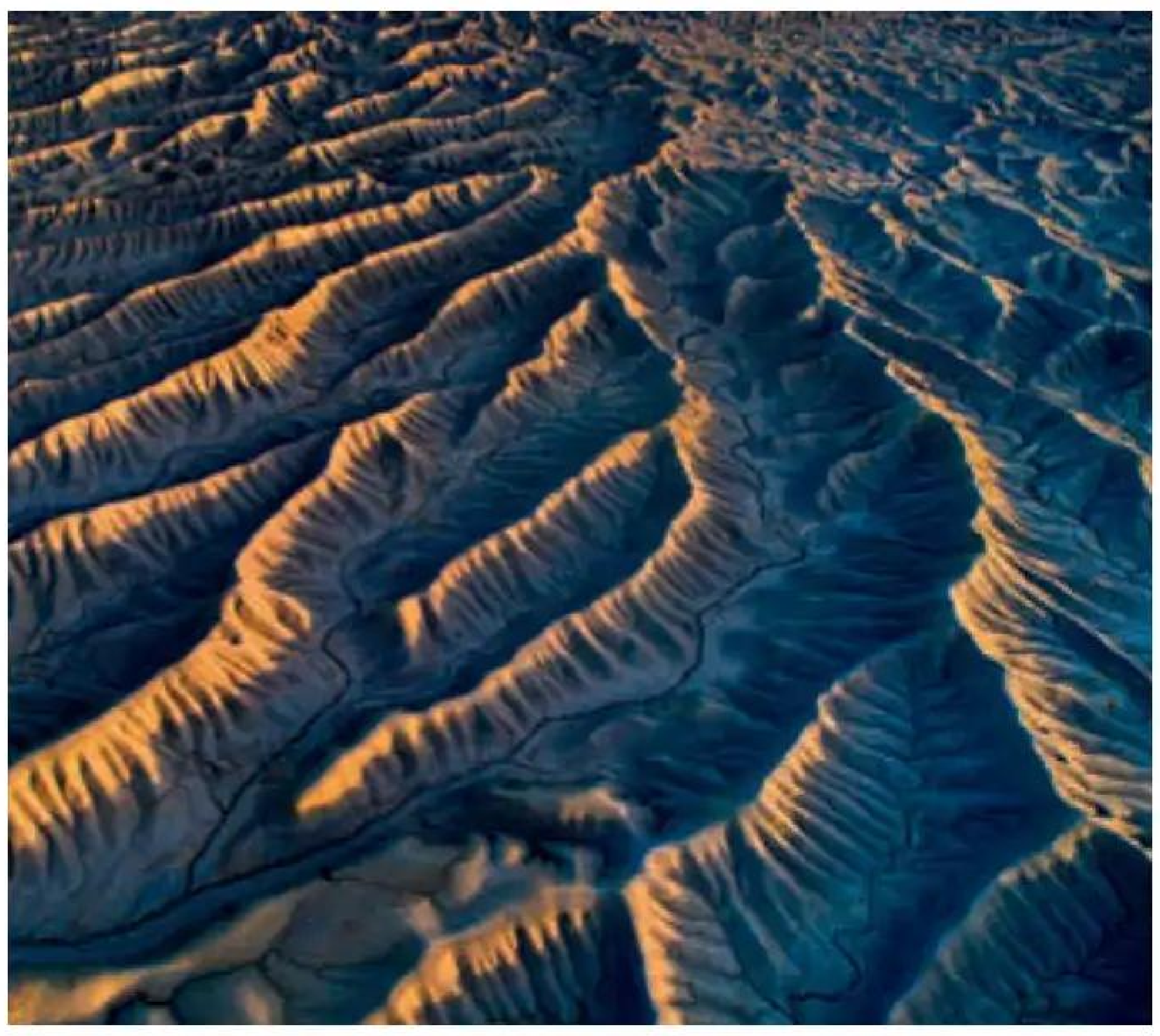
Framing

Framing is an effective tool for creating depth, simplifying a composition, and focusing attention on what's important. Examples of commonly used frames include trees, natural arches and old barn windows. Framing compositions often works best if the frame and subject are in different light, such as silhouetted trees framing a sunlit mountain.



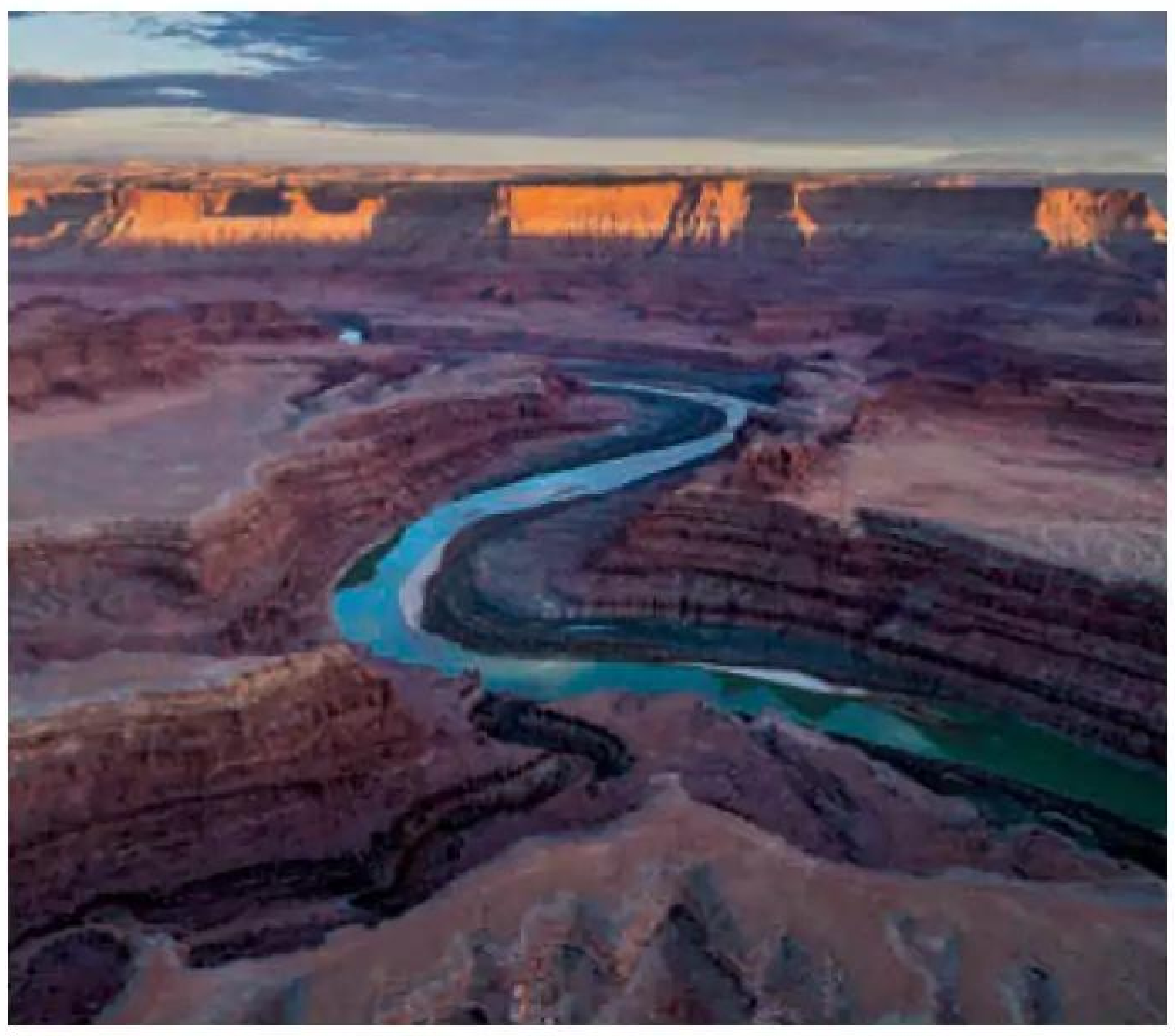
Near-far

Juxtaposing a close object with a far object creates depth in a composition and enhances visual interest. This is a favourite technique of landscape photographers and is especially powerful when using a wideangle lens close to a nearby object with stunning, dramatic scenery in the background.



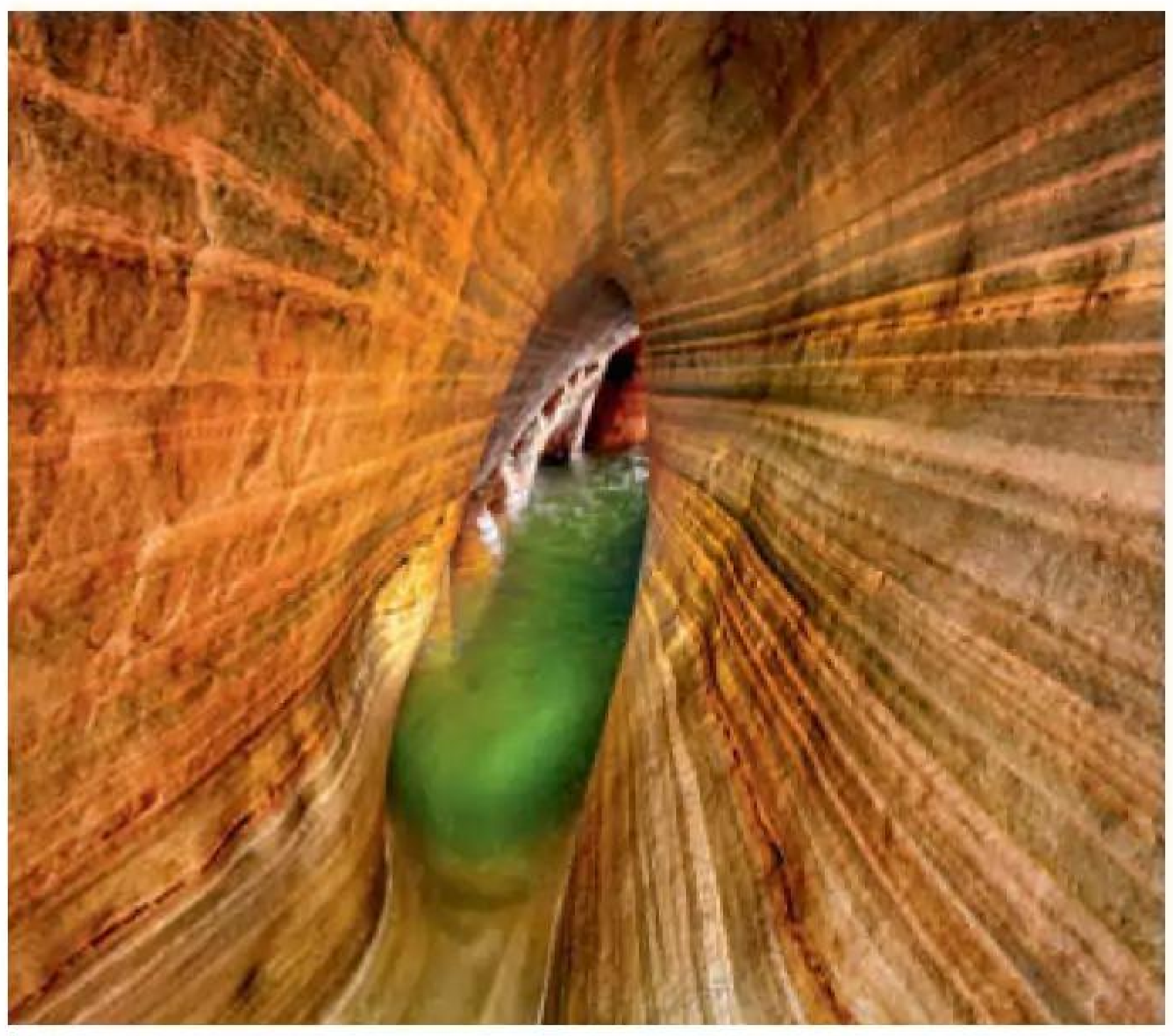
Patterns

Effective images can be made using a repetition of shapes that creates a pattern. The patterns can include things like a grove of trees, rippled sand, lichens on a rock, distant mountain ridges, a field of wild flowers, a flock of birds or pebbles on a rocky shore.



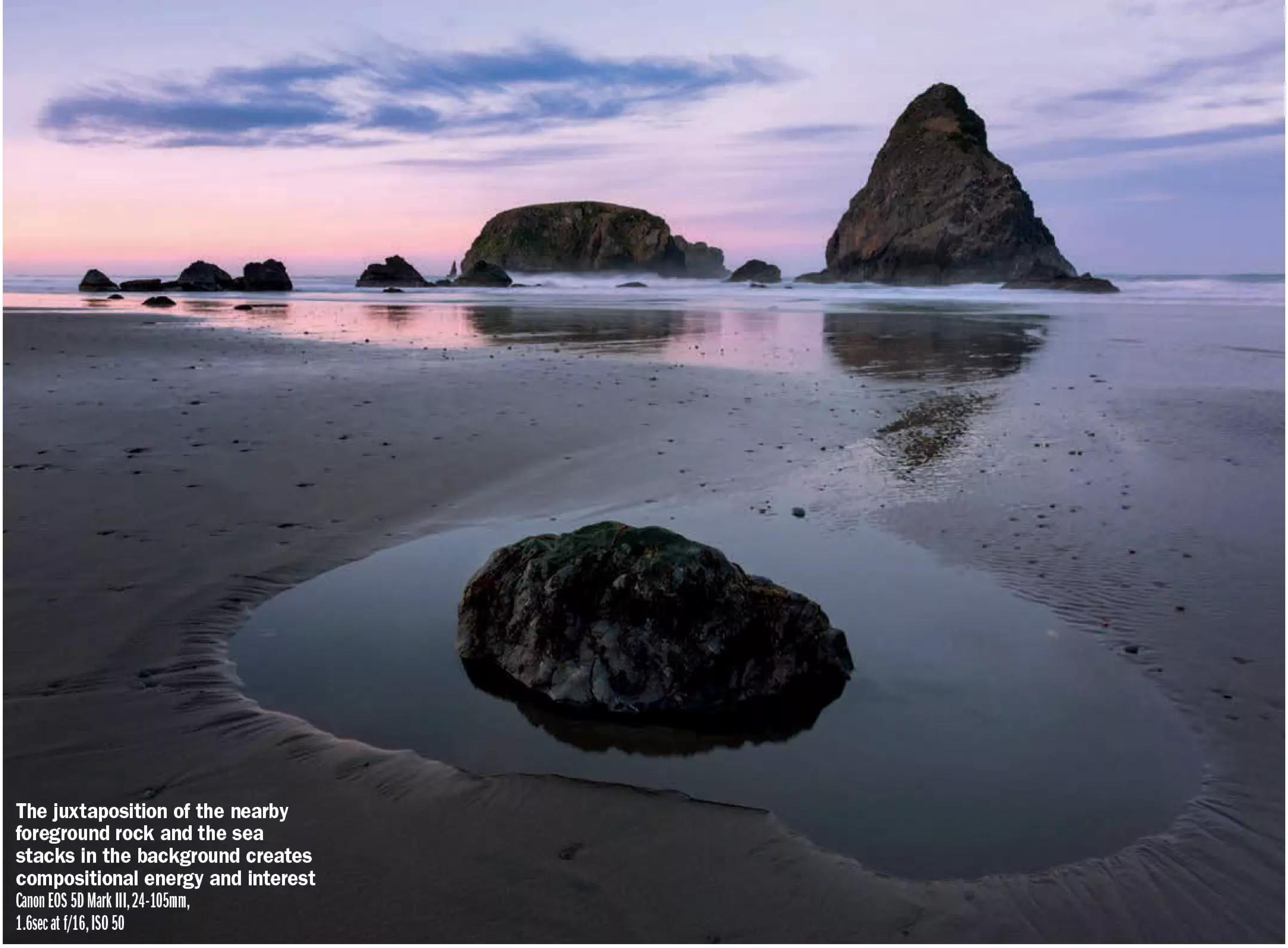
S-curves

It is often said that a 'curved line is the loveliest distance between two points.' Arguably, curves are more sweeping and elegant than lines, and although they take a bit longer to get to the point, s-curves encourage the viewer's eye to meander through multiple parts of the composition.



Visual vortex

When you have diagonal lines travelling from the image edges and corners right into the centre of the composition, an eye-catching vanishing point emerges, inexorably leading the viewer deep into the scene. I call this style of composition the 'visual vortex', and it creates a commanding visual effect, one to be used judiciously.



The juxtaposition of the nearby foreground rock and the sea stacks in the background creates compositional energy and interest
Canon EOS 5D Mark III, 24-105mm, 1.6sec at f/16, ISO 50

visually with your images. Your goal as a photographer is to engage the viewer's eye and command their attention. By doing so, you transform the viewer from a passive observer into an active participant, giving them a sense of being there, of being immersed within the scene. This helps to establish an emotional connection between the viewer and the photo.

Strive for 'dynamic balance'

A good composition has a mix of energy and harmony, known as dynamic balance. If a composition is too symmetrical and balanced, it will be boring, while a composition with too much visual energy will be chaotic. Somewhere between the two extremes is usually best. I typically strive to have some amount of symmetry for the general structure, while including anomalous visual elements that break up the symmetry and add visual energy. The goal is to create a balanced and pleasing composition, that nonetheless maintains a sense of vibrancy and motion.

Ten tips for compelling visual designs

Keep it simple

Think critically about what should be included within the image frame, and more importantly, what shouldn't. Exclude anything that doesn't make the composition stronger.

Avoid visual merger

Change your position as necessary to open up space between important objects so that they don't overlap.

Get close with wideangle lenses

By getting close to nearby objects with a wideangle lens, you can make even small objects look larger and more prominent in the composition.

Wait for the decisive moment

Don't just show up and shoot. When you've found the perfect subject or composition, wait for the 'decisive moment' that creates maximum visual energy.

Mix energy and balance

Too much balance in a composition is boring. Too much energy is chaotic. Try to uncover a mix between these two extremes.

Create a visual progression

A progression of multiple visual elements from the bottom to the top can encourage the viewer's eye to travel deeper into the composition.

Use visual opposition

Opposing visual elements create energy in a composition. Look for lines or shapes that tilt or point in opposite directions, encouraging the viewer to study all parts of the composition.

Get diagonal

Diagonal lines, and diagonal visual relationships, bring lots of energy to a composition. When appropriate, change your position to skew shapes diagonally.

Shapes and patterns emerge from the interplay of shadow and light
DJI Phantom 4 Advanced drone, 1/200sec at f/5, ISO 100

Use shapes

Look for simple, bold and dynamic shapes such as triangles or circles to form the basis of your compositions.

Put something between you and your subject

Just photographing your subject often isn't enough. Include additional objects between you and your subject to create depth and enhance visual interest.

Simple and bold shapes add a dynamic element
Nikon D810, 22mm, 1/4sec at f/11, ISO 64

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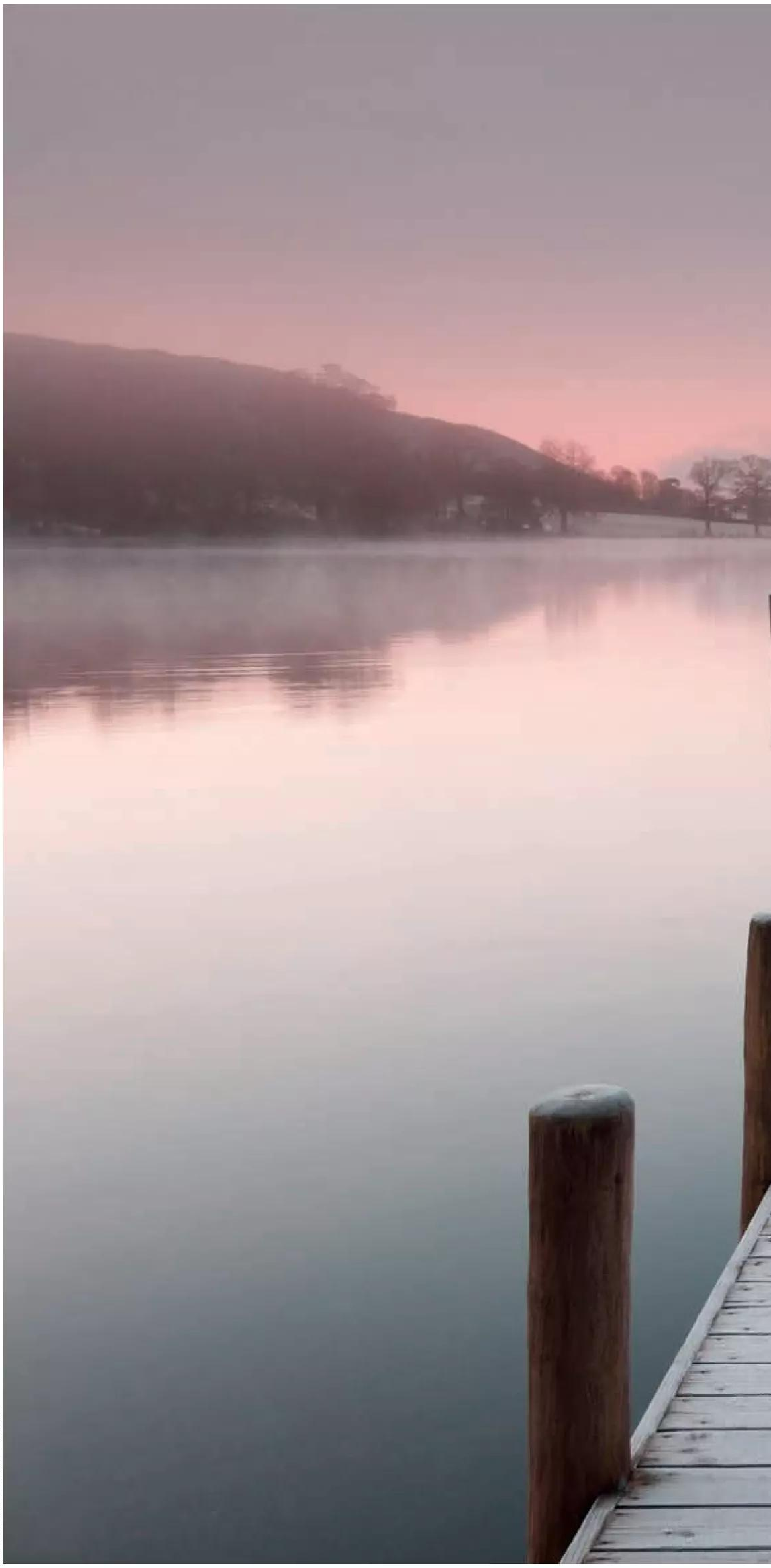
How to maximi

The key to achieving sharp images from front to back is understanding how your

Jeremy Walker
Jeremy is one of the UK's top landscape photographers and is known for his eye-catching panoramas, moody b&w landscapes and dramatic images of castles and ruins. He is the author of *Landscape*, and is in much demand as a speaker, writer, and workshop leader. Visit his website **jeremywalker.co.uk** or follow him on Facebook or Instagram.



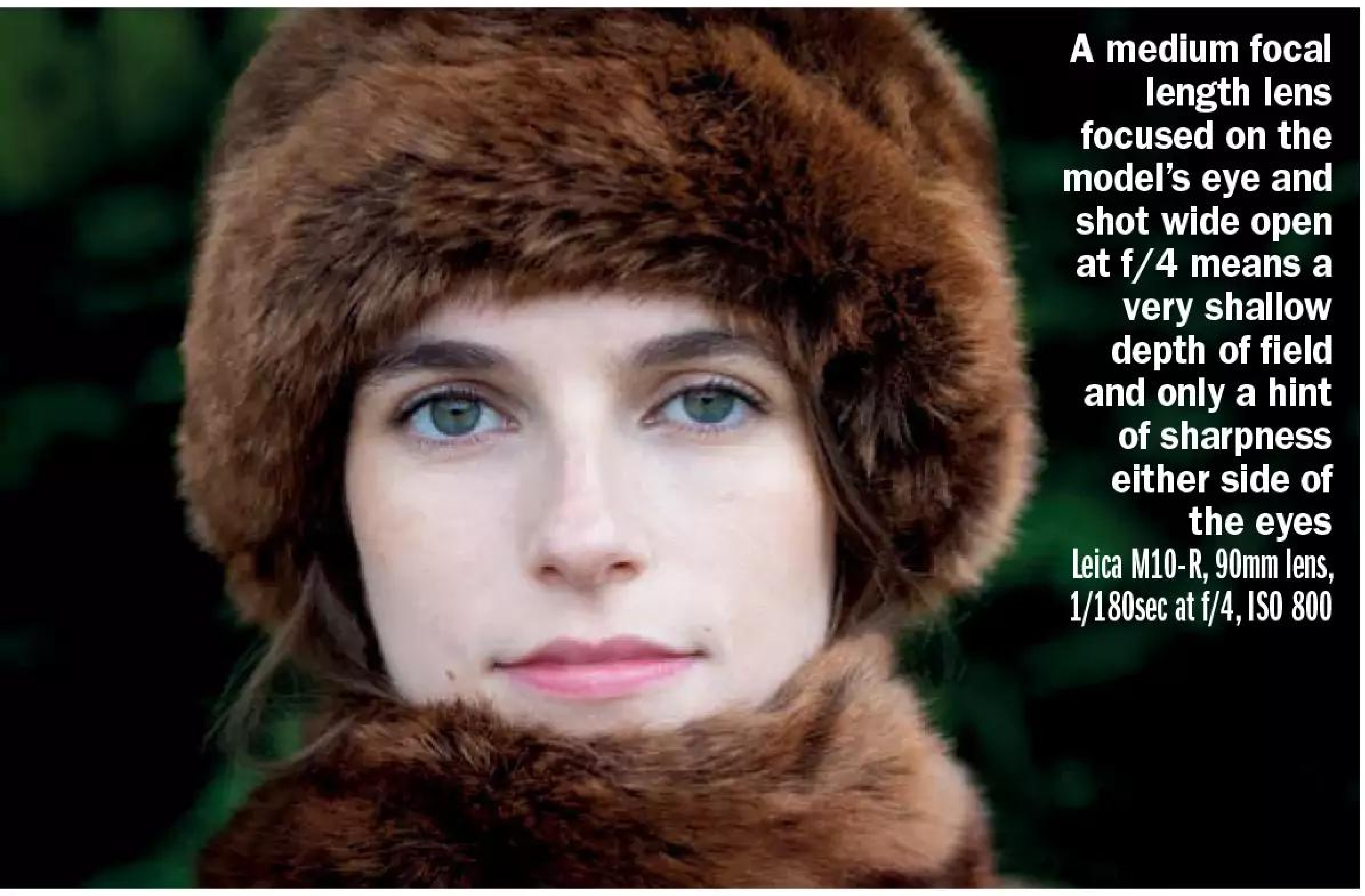
We all use it, and whether we fully understand the science and physics behind it, depth of field plays a key role in our photography, be it landscapes, portraits, architecture, or close-ups. Discussions on depth of field can get very technical and we could end up looking at various formulae to explain it. I won't! Oh, and by the way don't get 'depth of field' confused with 'depth of focus'. We are interested in depth of field, the stuff that is going on in front of the lens.

Simply put, the depth of field is the distance between the nearest and furthest objects in your composition that are acceptably sharp and in focus. That distance is affected by the aperture your lens is set to, relative to the focal length of that lens. Basically, the more you stop down (f/11, f/16 or f/22) the greater the depth of field. For any given aperture the depth of field will be greater on a wideangle lens and much shallower on a longer telephoto lens.

As a landscape photographer the chances are you will want your images to be sharp from front to back, and you will be looking to maximise the depth of field, shooting 'stopped down' at f/8 or f/11. As a portrait or fashion photographer the trend is to shoot with the lens wide open, (f/1.4 or f/1.8) utilising a very shallow depth of field where perhaps just the eye is in focus.

Diffraction

Many people will assume that to gain more depth of field – and hence get more of their image in sharp focus you just stop down to a small



A medium focal length lens focused on the model's eye and shot wide open at f/4 means a very shallow depth of field and only a hint of sharpness either side of the eyes
Leica M10-R, 90mm lens, 1/180sec at f/4, ISO 800

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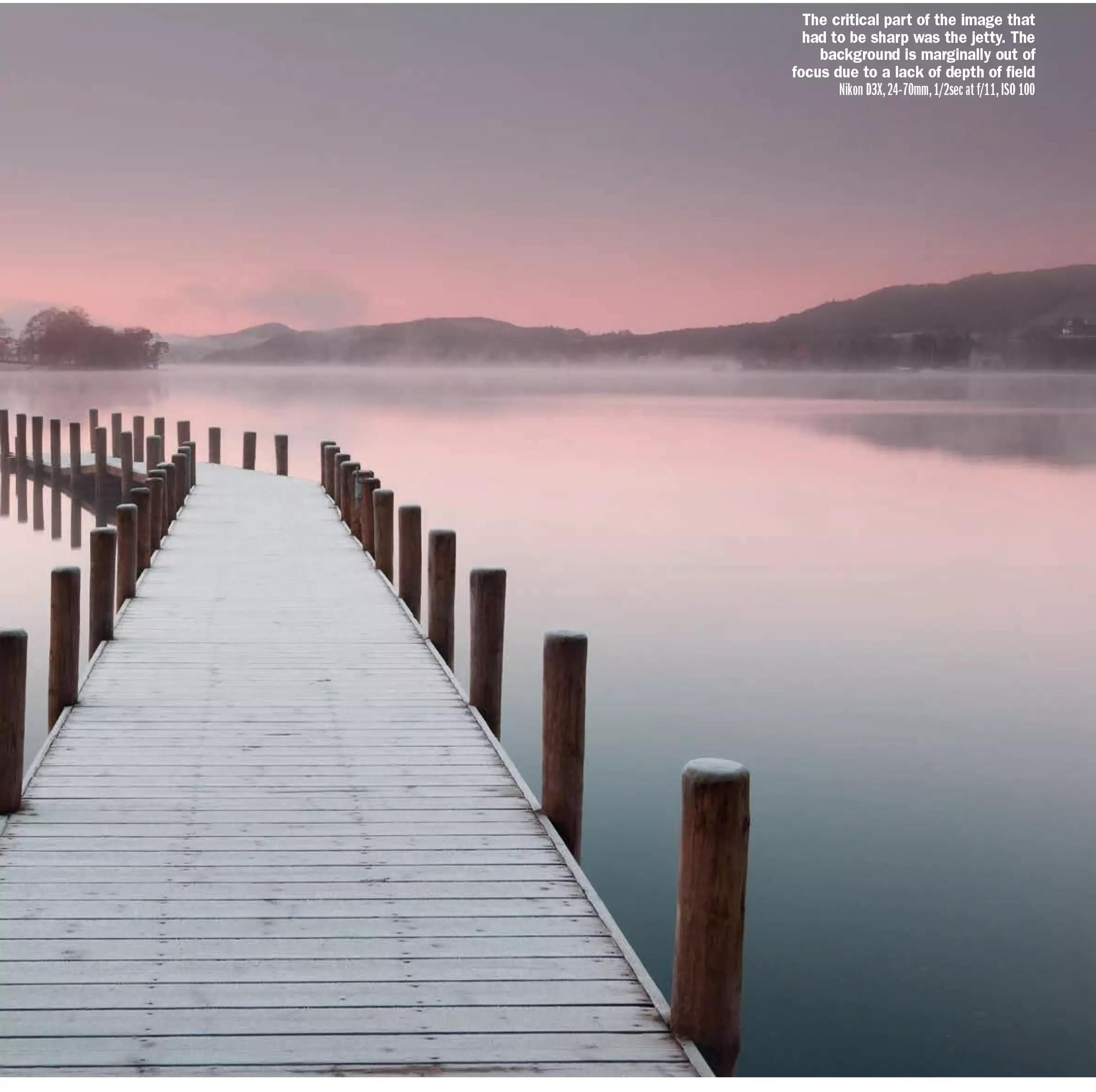
se depth of field

lens works and understanding hyperfocal distance. **Jeremy Walker** explains all



The critical part of the image that had to be sharp was the jetty. The background is marginally out of focus due to a lack of depth of field
Nikon D3X, 24-70mm, 1/2sec at f/11, ISO 100

aperture, such as f/16 or f/22. Well, the depth of field is increased but there is a trade-off in image quality. The smaller the aperture, the greater risk of diffraction, whereby individual light wavelengths are being distorted and the image will look softer.

So how do you find the sweet spot? Where do you focus and what aperture do you shoot at? It is a common question on my workshops. Most lenses have a sweet spot, a point where the optics are at their best. I was told as a young assistant, many years ago, that a lens operated best at two stops down from its maximum aperture, therefore an f/2.8 lens would be at its sharpest at about f/5.6, which is all very well until you start shooting landscapes with a great deal of foreground and need some depth of field. Without being particularly scientific about it I shoot my landscapes at about f/11 on a wideangle lens without any noticeable deterioration in image quality.

Hyperfocal distance

The hyperfocal distance is a point in your composition at which all objects can be brought into focus. Basically, the hyperfocal distance is the point at which you will gain maximum depth of field. So how do you find the hyperfocal distance? Well, there's an app for that! In days of old you may have carried a small chart that showed focal lengths and apertures and then the required distance on which to focus. However, more and more modern lenses have no focusing distance scales on them, especially zooms, and so the use of the hyperfocal distance is becoming a thing of the past. From recent experience I know that Zeiss Milvus and Leica lenses have the necessary 'traditional' focusing scales.

So, if finding the hyperfocal distance is becoming harder, how do you find the sweet spot at which to focus? Coloured 'focus peaking' will give you a pretty good idea of what is going to be in focus and as technology moves along no doubt the camera will just tell you where the hyperfocal distance is.

Of course, with the advancement in camera technology allied with post-production software, focus stacking has become the way to gain maximum depth of field whilst utilising the sharpest part of the lens. Multiple images of the same subject but focused at different distances and blended together using software such as Photoshop is rapidly becoming the norm, both for landscape photographers and close-up/macro shooters.

Tilt-Shift lenses

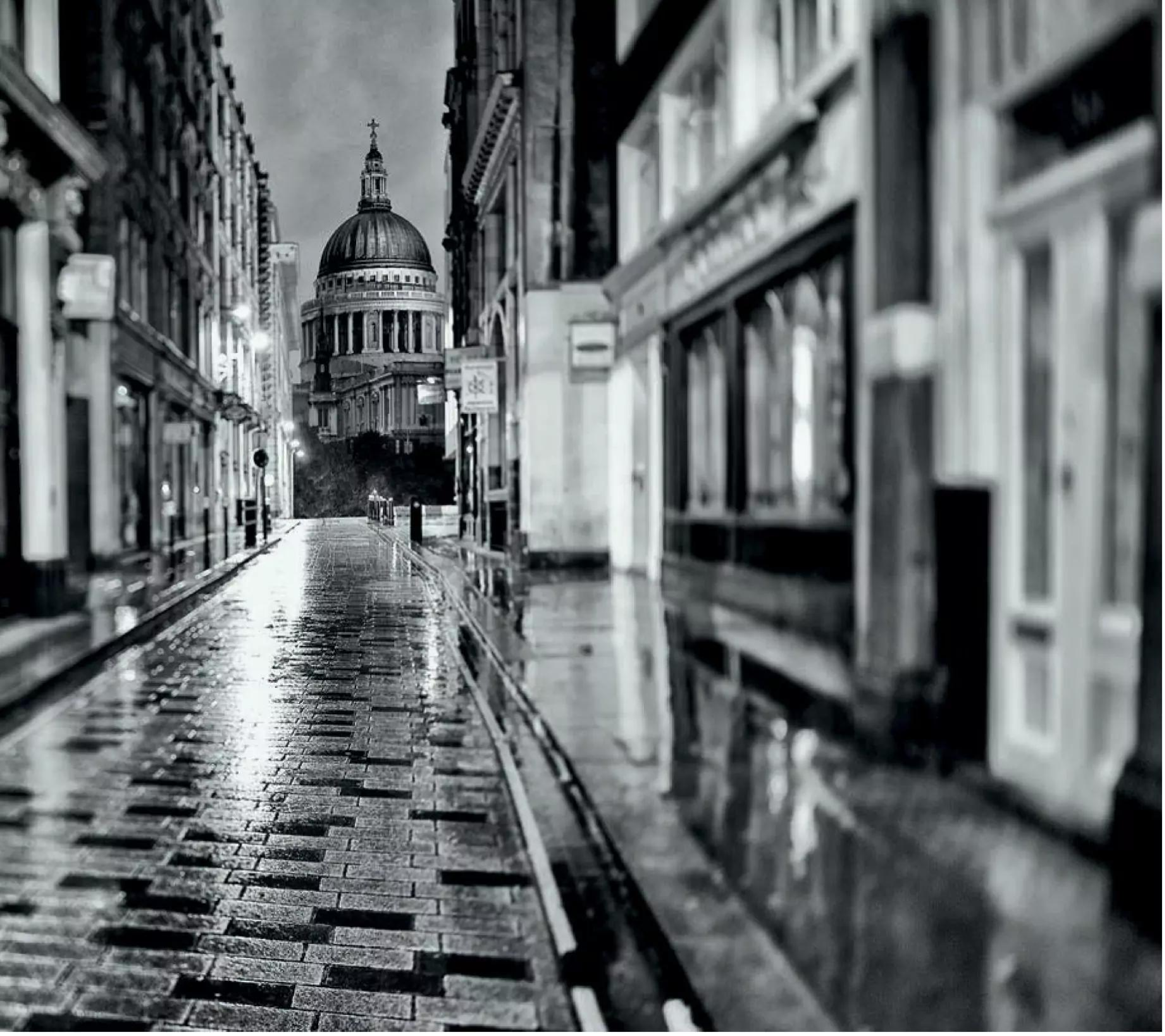
For those photographers who own tilt-shift lenses there is another way of increasing the depth of field. By tilting the front elements of the lens, the position of the depth of field can be changed – think cheese wedge or door-stop shape. This wedge-shaped area of focus can be controlled so that front-to-back image sharpness is possible, even at relatively large apertures. Tilt-shift lenses are superb tools for controlling depth of field and are incredibly versatile and creative lenses. If you are feeling really technically minded look up the 'Scheimpflug Theory'.

Conclusion

Simplicity is the key. I shoot most of my landscapes at f/11 and I focus about a third of the way into the composition if I'm shooting with a wideangle lens. I know that at f/11, infinity to a few metres in front of me will be sharp. It's not very scientific but it works for me. There are those who would also argue that focusing on the hyperfocal distance means that you are not actually focusing on anything in particular. If you have something that is critical to your image, focus on it – if nothing else the main point of interest needs to be sharp. It is far too easy to get wrapped up in technical and scientific minutiae when shooting. Try f/11, focus a third of the way in and see what happens.

Showing the subject isolated from the background by using a narrow depth of field caused by a large aperture
Nikon D3X, 70-200mm, 1/125sec at f/3.2, ISO 100

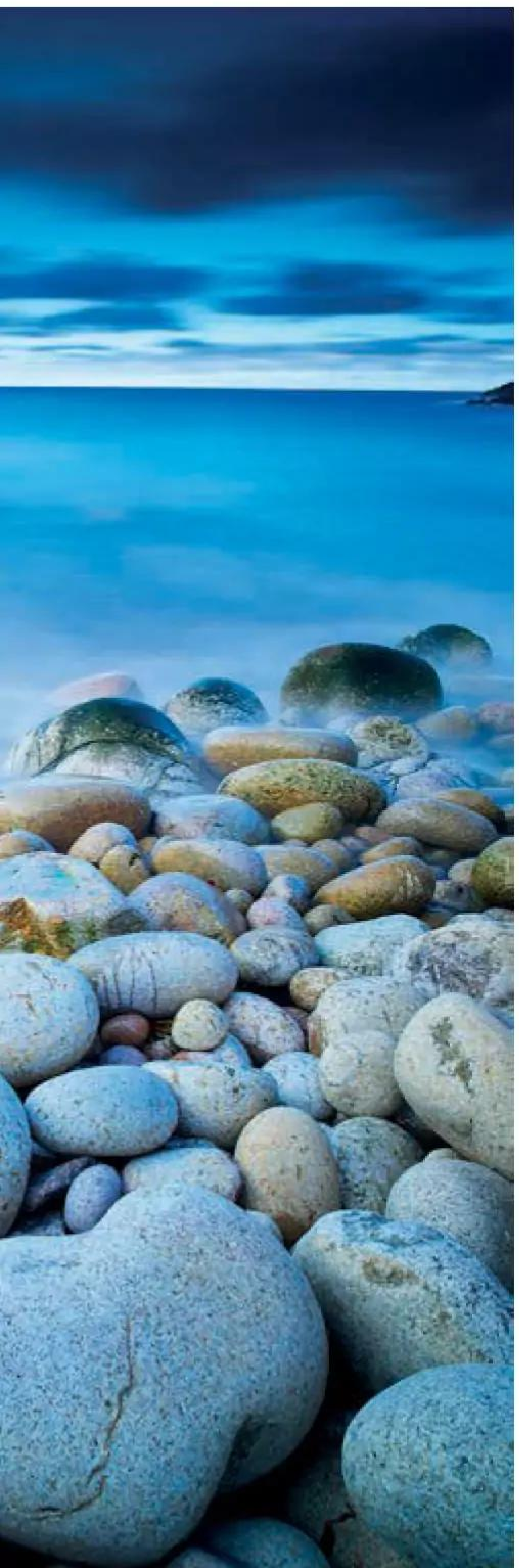
Allowing more distance from the camera to the subject helps with the depth of field. If the composition is not quite right, you can always crop in afterwards
Nikon D3s, 21mm lens, 2 minutes at f/8, ISO 200



Why it works

St Paul's Cathedral, London

Trying to avoid modern and distracting shop fronts is a bit of a nightmare. Endlessly cloning out identifiable brand names, alarm boxes and signs can be a bit of a chore. By using the unique properties of a tilt-shift lens to control the depth of field, the only thing that is sharp is a narrow portion of the street and St Paul's Cathedral in the distance. This technique creates a specific look and feel to the image and shows that depth of field can be a creative tool rather than just a means of getting an image in focus, from front to back.



Jeremy's top tips

Double-check focus

Compose and focus on your image and when you are ready to shoot, check the focus again. Use the stop down button to see your image at the working, stopped-down aperture and you will see the depth of field and what is and what isn't sharp.

Check at 100%

Shoot your image and then check it at 100%. Check and check again. If necessary, use a loupe magnifier such as a Hoodman to block out extraneous light to make viewing easier.

Focus a third of the way in

Don't get too worked up by the depth of field and all the technicalities it can bring. Think about using a wideangle lens for landscapes, focus about a third of the way into the image and shoot at f/11.

Explore techniques

Focus stacking has been a huge leap forward in controlling and increasing depth of field, both for landscape work and macro images. Many up-to-date cameras have focus-stacking modes and software is relatively simple to use. There are also plenty of online tutorials available.

Showing extreme depth of field achieved by focus stacking three images
Nikon D850, 24-70mm, 20 secs at f/11, ISO 100

KIT LIST

Grey card

If you place a grey card in front of your subject – in the same light – take a spot-meter reading from it, and lock in these settings, you will achieve correct exposure. These days most photographers prefer to use histograms instead.

Handheld light meter

SEKONIC
125
16.0

A handheld light meter is the most precise tool for measuring light. Unlike your camera's TTL metering, it isn't deceived by extreme contrast or side-lighting. While they are useful for some types of photography they are no longer essential.

Light metering app

A cheaper and more convenient alternative to buying a light meter is a smartphone app. Consider Pocket Light Meter, Photometer, myLightMeter and Lux Light Meter, which all turn your phone into a meter capable of measuring reflected light.

Lightmeter
PRO

Exposure calculator app

One of the best apps for helping with exposure is Exposure Calculator (by Quicosoft, available on Google Play). It aids in the calculation of equivalent exposures using alternative parameters or with filters added. The app has a built-in timer and an alarm for bulb exposures.

Neutral density (ND) filters

ND filters are useful accessories for manipulating exposure. They are dark grey filters that absorb light in order to artificially extend exposure length. ND filters come in a range of densities. They are useful for creatively blurring subject motion.

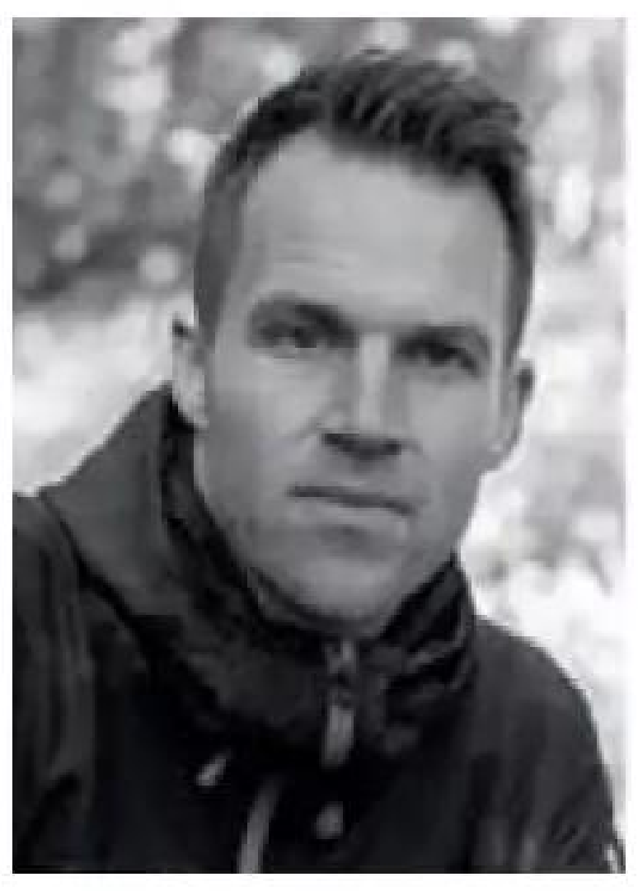
ALL PICTURES © ROSS HODDINOTT

Male banded demoiselle. In theory, silhouettes are the result of poor exposure, but combined with the right subject they can look very striking
Nikon D850, 200mm, 1/8000sec at f/5, ISO 31

Maximum exposure

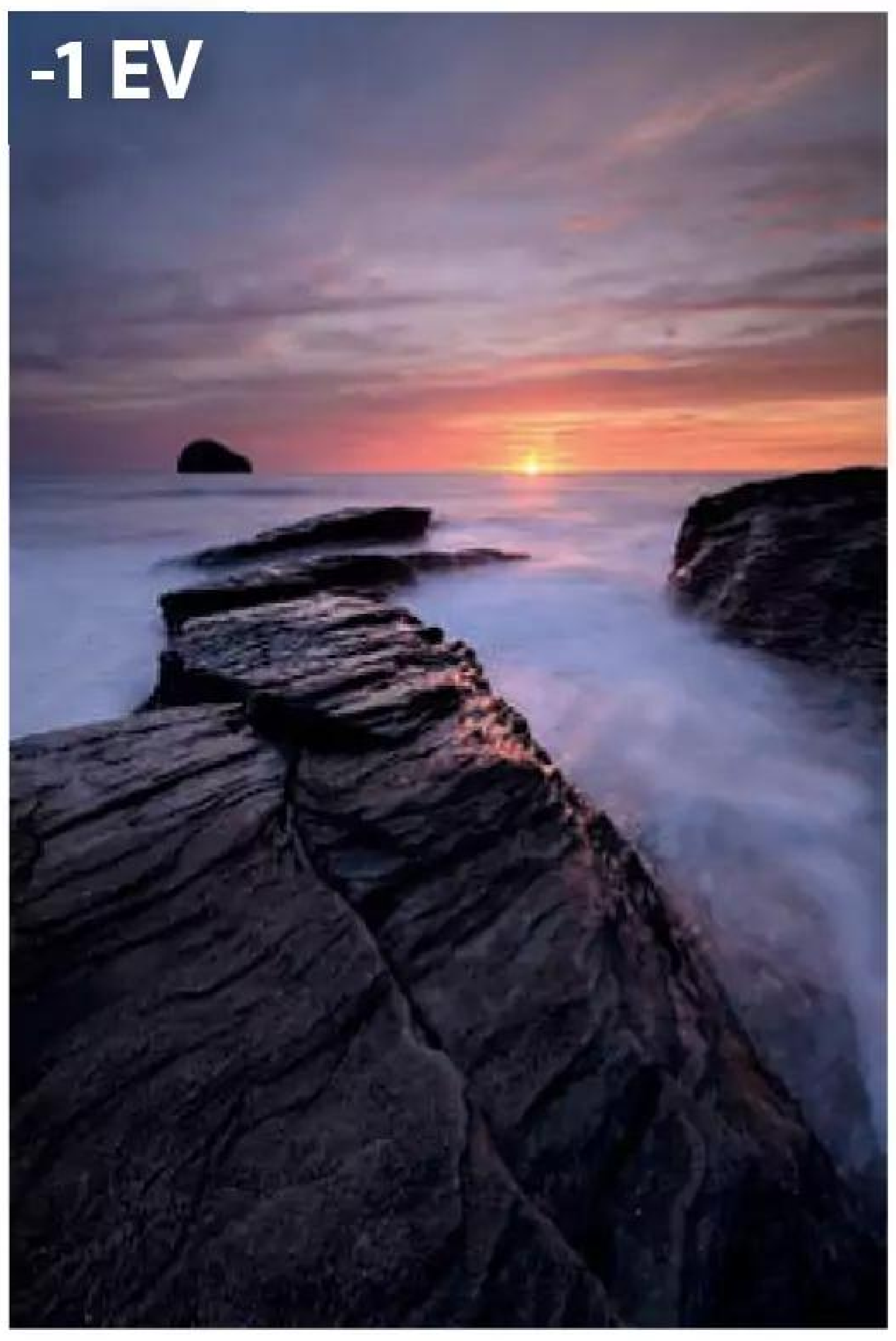
What is perfect exposure? How useful are histograms? When should you use spot metering, and should you still expose to the right? **Ross Hoddinott** has the answers

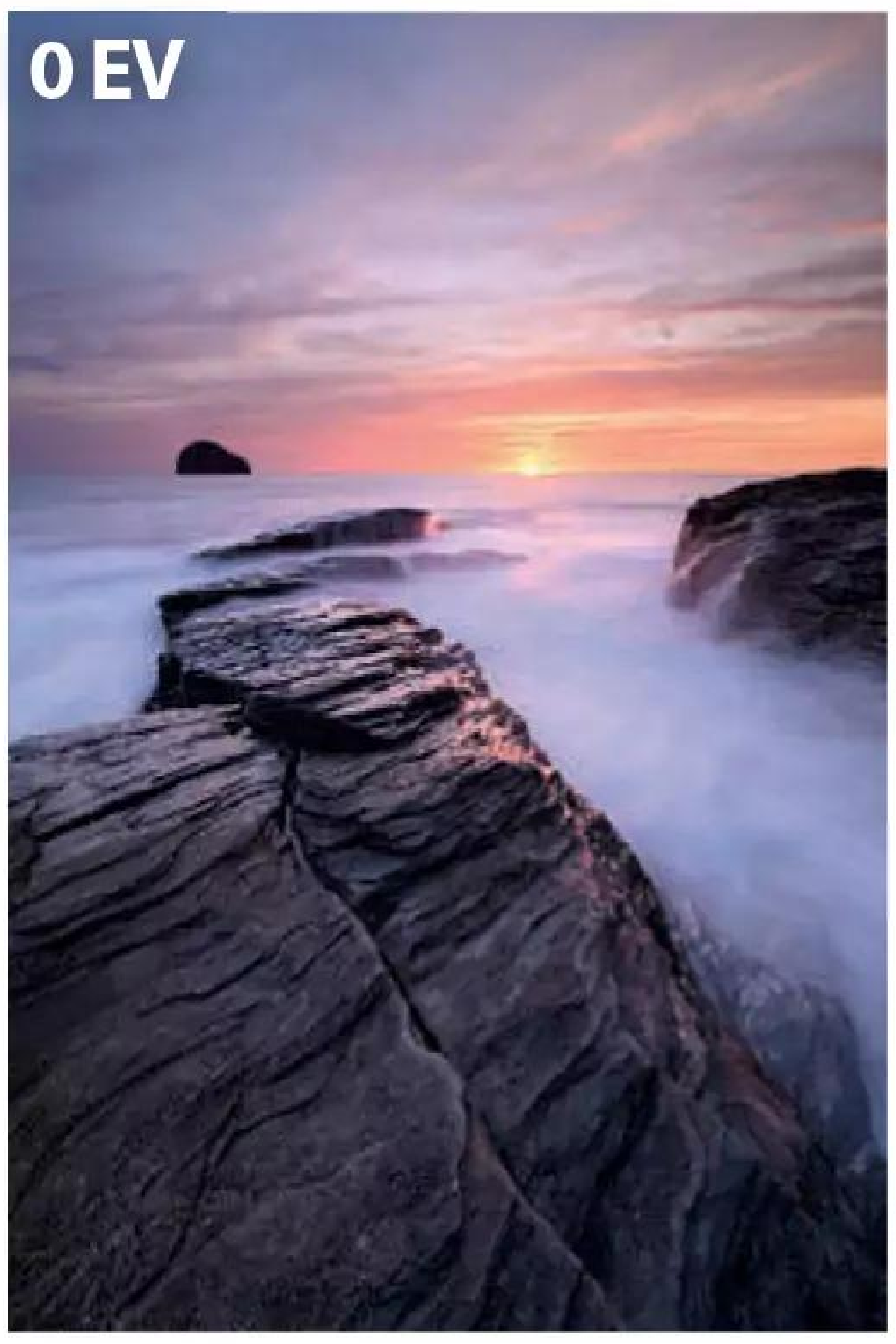
Ross Hoddinott

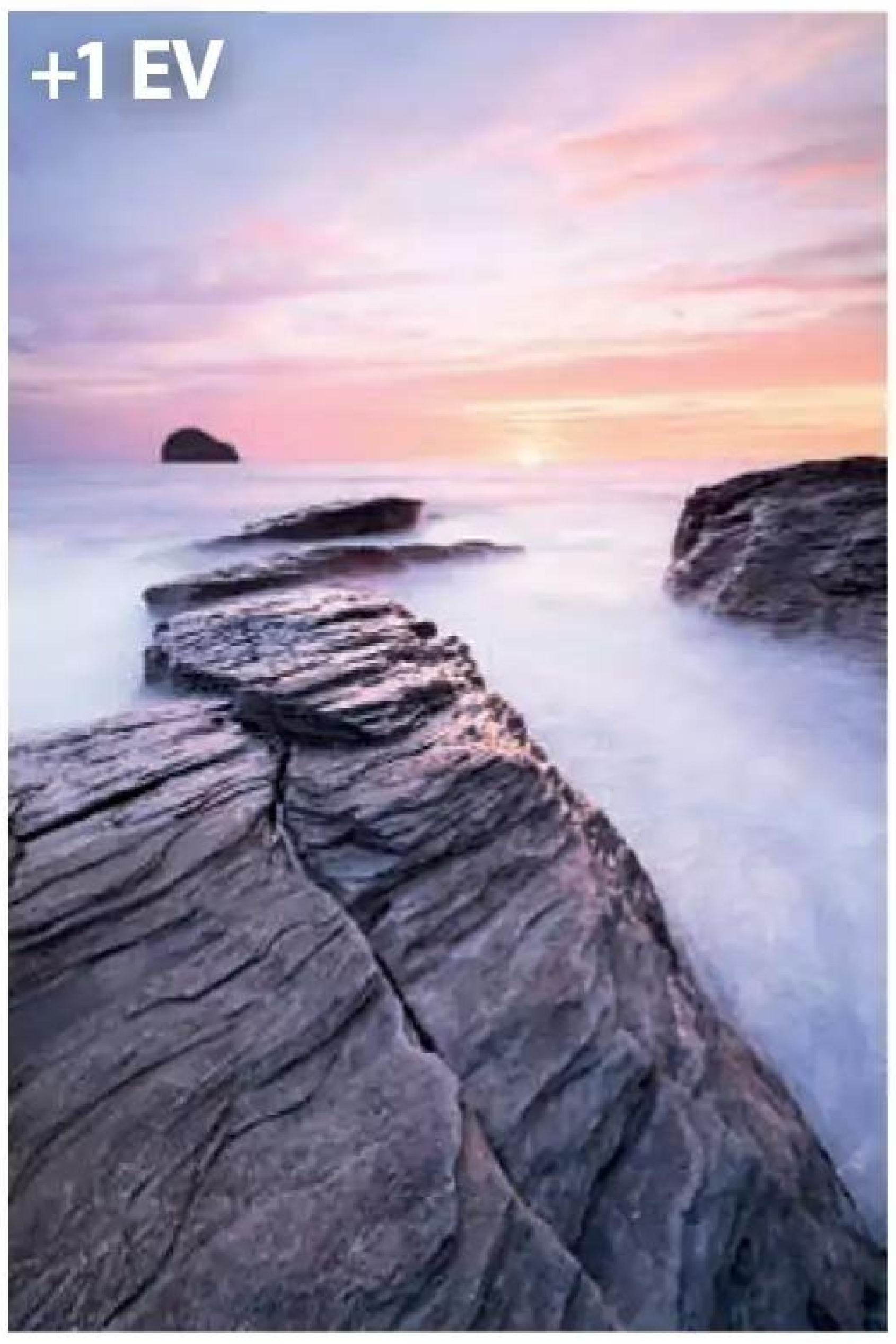


Ross Hoddinott is one of the UK's leading landscape and natural history photographers and a regular contributor to the photography press. He is based in North Cornwall and the author of several books, including *The Digital Exposure Handbook*. Visit **www.rosshoddinott.co.uk**

Exposure is the very heartbeat of photography – always has been, always will be. Put simply, it is the process of light striking a photosensitive material, like a sensor or a piece of film. As you likely know, exposure is determined by a combination of three settings: shutter speed, aperture size and ISO speed. Shutter speed is the duration for which the camera's shutter remains open, allowing light to enter and expose the sensor (or film). The aperture – or f-stop – is the size of the adjustable lens diaphragm, which dictates the amount of light entering the camera. The ISO speed indicates the sensor's sensitivity to light. In order to achieve 'correct' exposure, photographers must employ the right combination of these settings. Too much light reaching the sensor will result in





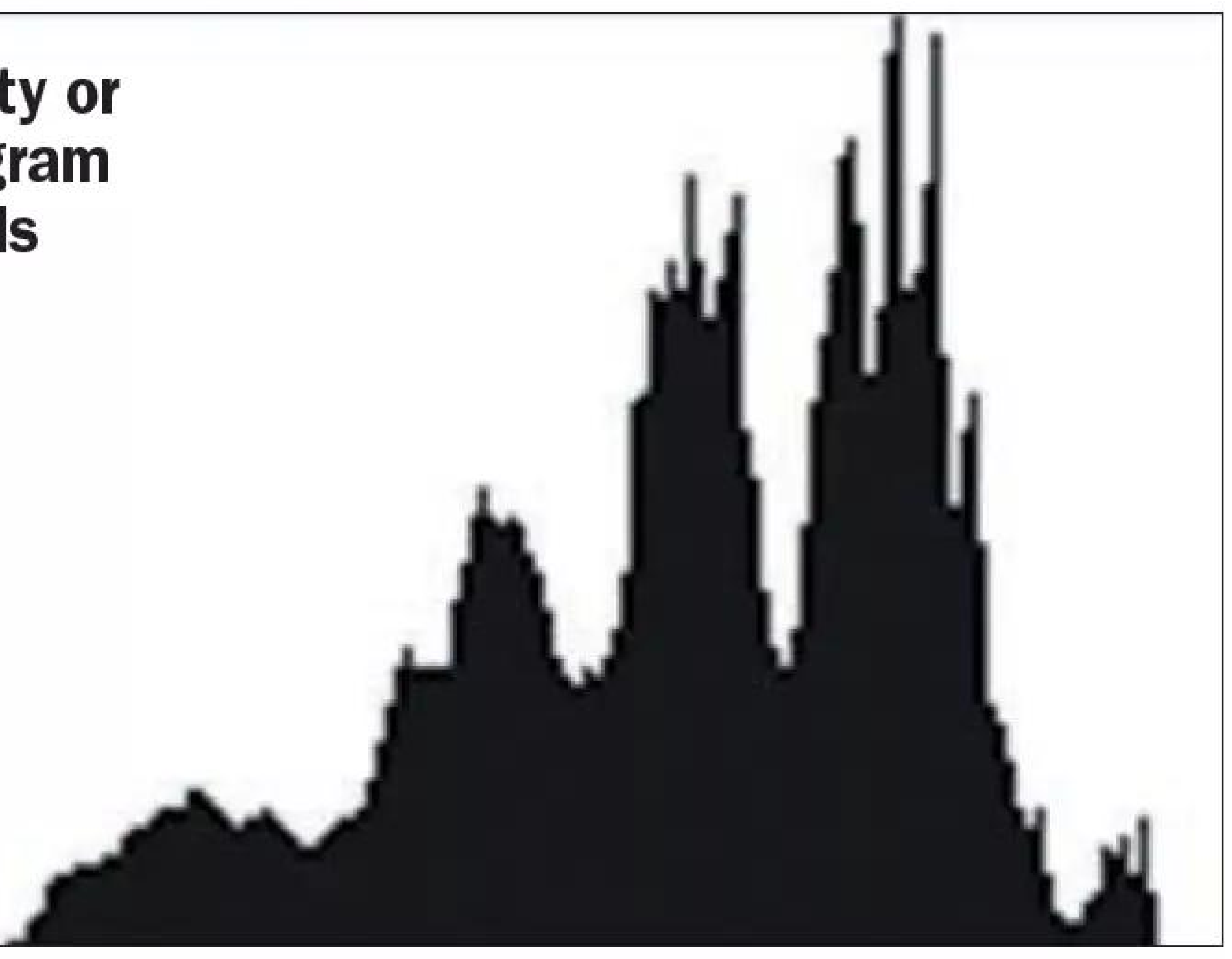


When to apply exposure compensation

EXPOSURE aids, like histograms and highlight alerts, help photographers quickly identify exposure errors. But how do you override the recommended settings to correct problems or to expose more creatively?

If you are shooting in Manual exposure mode, simply select a shorter shutter length to correct overexposure and make your images darker, or a slower shutter speed to make your images brighter and correct underexposure. If you are using a semi-automatic exposure mode like Aperture Priority, you can use the exposure compensation button, which is indicated by a +/- icon. By depressing this button and rotating the control dial or wheel, you can quickly apply positive (+) compensation to make images lighter or a negative (-) amount to make images darker. It is best to do this using either 1/3- or 1/2-stop increments, using your live histogram to guide you.

Exposure compensation is an important function. A word of warning: remember to return the level of compensation back to 0, or the same level of compensation will be applied to subsequent shots.



If you're shooting a misty or snowy scene the histogram will be weighted towards the right edge

How to read a histogram

HISTOGRAMS are important tools to help digital photographers assess and interpret exposure. Most DSLRs allow you to view a 'live' histogram, while mirrorless cameras allow you to preview it through the EVF. You can also view a photograph's histogram when you replay an image. Basically, a histogram is a two-dimensional graph that maps an image's tonal extent. The horizontal axis represents the tonal range from pure black (0, far left) to pure white (255, far right), while the vertical axis illustrates how many pixels have that particular value. Despite what people say, there is no such thing as a perfect histogram – it all depends on the subject matter.

Use your discretion

Generally speaking, you want the graph to show a good spread of tones across the horizontal axis. If the graph shows the majority of pixels grouped to the left, this normally indicates a dark, underexposed image; if the graph is biased to the right, this likely indicates an overexposed image.

However, you need to use a bit of discretion when reading histograms. For example, if you are photographing a silhouetted subject, you would expect to see a sharp spike on the far left of the graph, while for a misty or snowy scene (like the one above), the histogram should be weighted toward the right edge. However, when a histogram is falling off one side of the graph, it is 'clipped' – and once a pixel is recorded as either pure black or pure white, no detail can be recovered and the image quality is affected.

By regularly checking histograms, you can easily assess exposure. For example, if your histogram is pushed up on the right edge (indicating overexposure), simply apply negative exposure compensation (or select a faster shutter speed if you are in Manual mode) for better exposure. If you are using the live histogram, it will adjust as you apply the compensation, and you will be able to see when you've applied the right level.

overexposed shots; not enough and the images will be underexposed.

What is perfect exposure?

In most cases, the correct exposure is one that records a scene exactly as our eyes see it. But it is worth underlining that a technically correct exposure will not always produce the most aesthetically pleasing or creative result. Nothing in the photography rulebook says we have to capture things as our eyes see them. Understanding exposure and how to manipulate it is a key skill for creating eye-catching images.

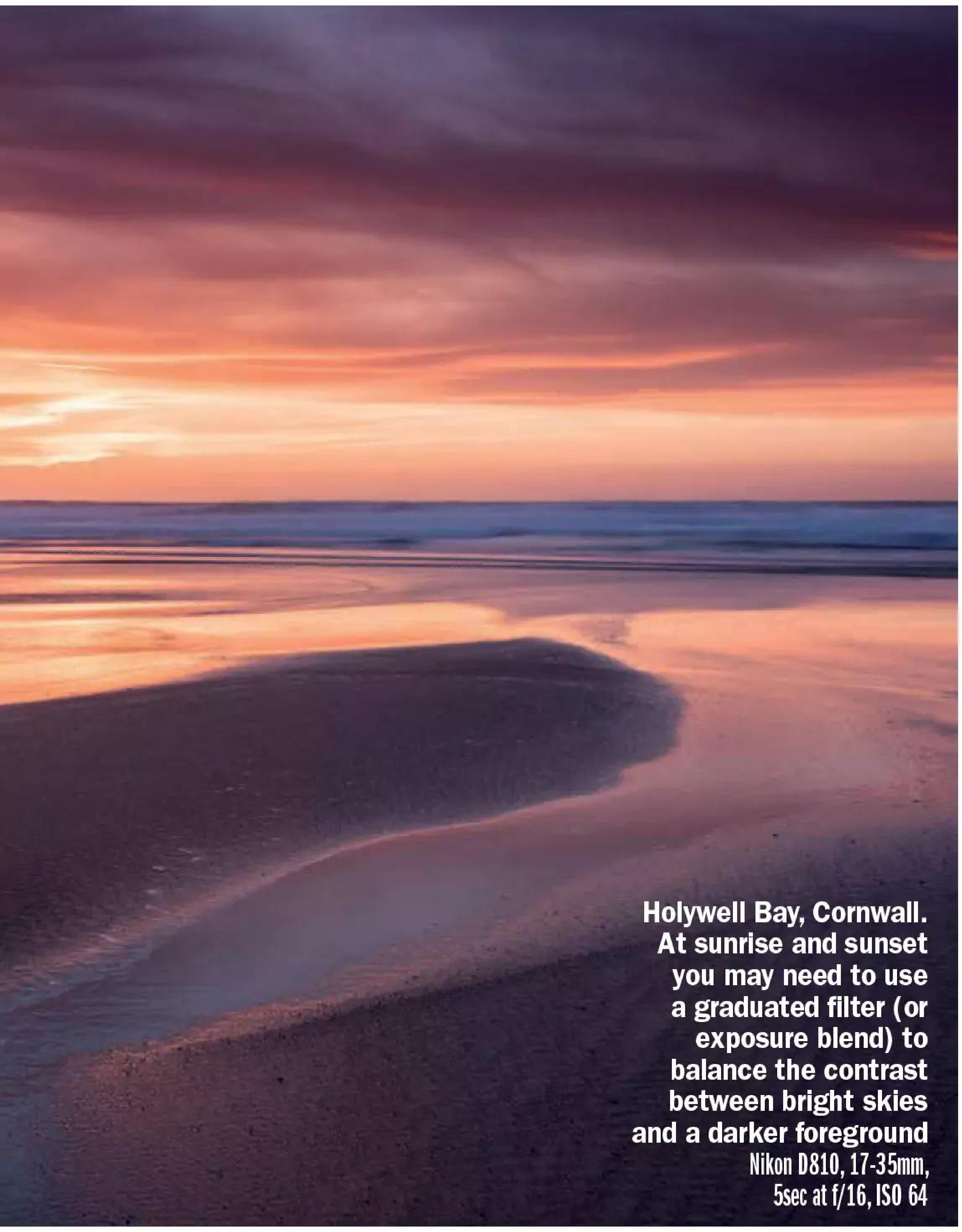
In truth, the correct exposure is one that is faithful to your vision and an interpretation of the scene at the moment you triggered the shutter.

Which exposure mode?

Most consumer cameras have a number of pre-programmed modes optimised for different subjects, but they tend to limit control so I would suggest you ignore them in most situations. Instead, it's best to rely on the 'Core Four': Programmed Auto (P), Aperture Priority (A or Av), Shutter Priority (S or Tv) or Manual (M). Your choice of exposure mode is important, with each offering a varying level of control. The key thing for most subjects is that you control depth of field – you don't want the camera guessing the effect you're after. For this reason, I usually opt for either Aperture Priority or Manual.

Aperture Priority is a semi-automatic exposure mode, meaning that once you've selected the f/stop, the camera will select what it believes to be the correct shutter speed to achieve good exposure. Your Through The Lens (TTL) metering is typically very reliable and should select the correct corresponding shutter length.

If you opt for Manual exposure mode instead, you will need to set the shutter



Holywell Bay, Cornwall. At sunrise and sunset you may need to use a graduated filter (or exposure blend) to balance the contrast between bright skies and a darker foreground
Nikon D810, 17-35mm, 5sec at f/16, ISO 64

speed yourself. This is not as daunting as it sounds. As with all other exposure modes, the camera takes a light meter reading from the scene or subject whenever you semi-depress the shutter release button. However, rather than apply this setting (as it does in Aperture Priority), it is down to the photographer whether to dial-in the recommended setting or not. Although Manual requires more input from the photographer, it gives you ultimate control.

Is low ISO the way to go?

When shooting fast action, like sport and wildlife, your priority will often be a shutter speed fast enough to freeze action. In which case, Shutter Priority is a better choice. This does the inverse of Aperture Priority – you select the shutter speed, and the camera sets the corresponding f/number. Typically, when you want speed, you will need to increase ISO too. As a general rule, it's best to use your camera's lowest (highest-quality) native ISO sensitivity – typically, 64, 100 or 200 – as higher sensitivities produce more noise, which obscures fine detail. But don't be scared to increase ISO to achieve a faster speed – the high-ISO noise performance of modern cameras is excellent. I regularly shoot at ISO 1600 and higher.

You can either increase ISO manually or turn on Auto ISO to enable the camera to adjust the ISO relative to the light. However, if you decide to use Auto ISO sensitivity control, I recommend you first select a maximum sensitivity to ensure the ISO doesn't rise too high and affect image quality. For example, if you are comfortable with your camera's ISO performance up to, say, ISO 3200, you would enter this as your maximum setting and the camera wouldn't exceed this value while Auto ISO is active.

❯

Exposure top tips

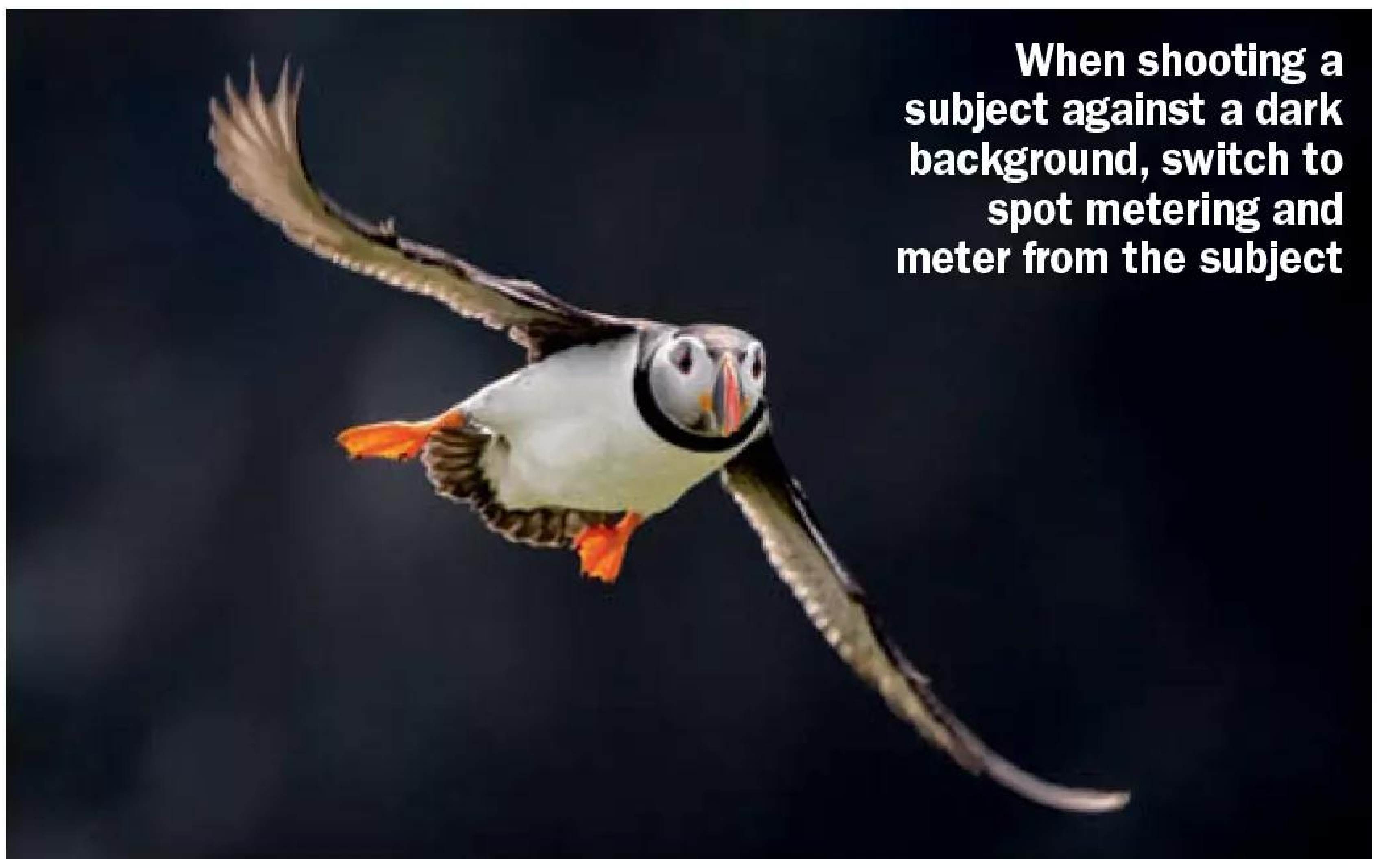
Top tips for achieving perfect exposures – with a little helping hand from your camera

Highlights warning

Ensure your camera's highlights alert is switched on – normally accessed via the Playback Menu. Doing so will help you to avoid poor exposure. This warning shows exactly which parts of the photograph are overexposed by blinking (like a strobe light) when you replay your images on the LCD monitor. 'The blinkies' will help you to assess exposure, apply compensation and reshoot if necessary.

Histogram

Check your histogram regularly (see far left). Most cameras now allow you to activate a live histogram, so you can assess exposure before you even trigger the shutter. Alternatively, replay the image and view the corresponding graph. It is normally desirable to avoid spikes on the far left or right edge – these typically indicate poor exposure and a loss of detail.



When shooting a subject against a dark background, switch to spot metering and meter from the subject

Nikon D500, 80-400mm, 1/1000sec at f/5.6, ISO 640

Spot meter

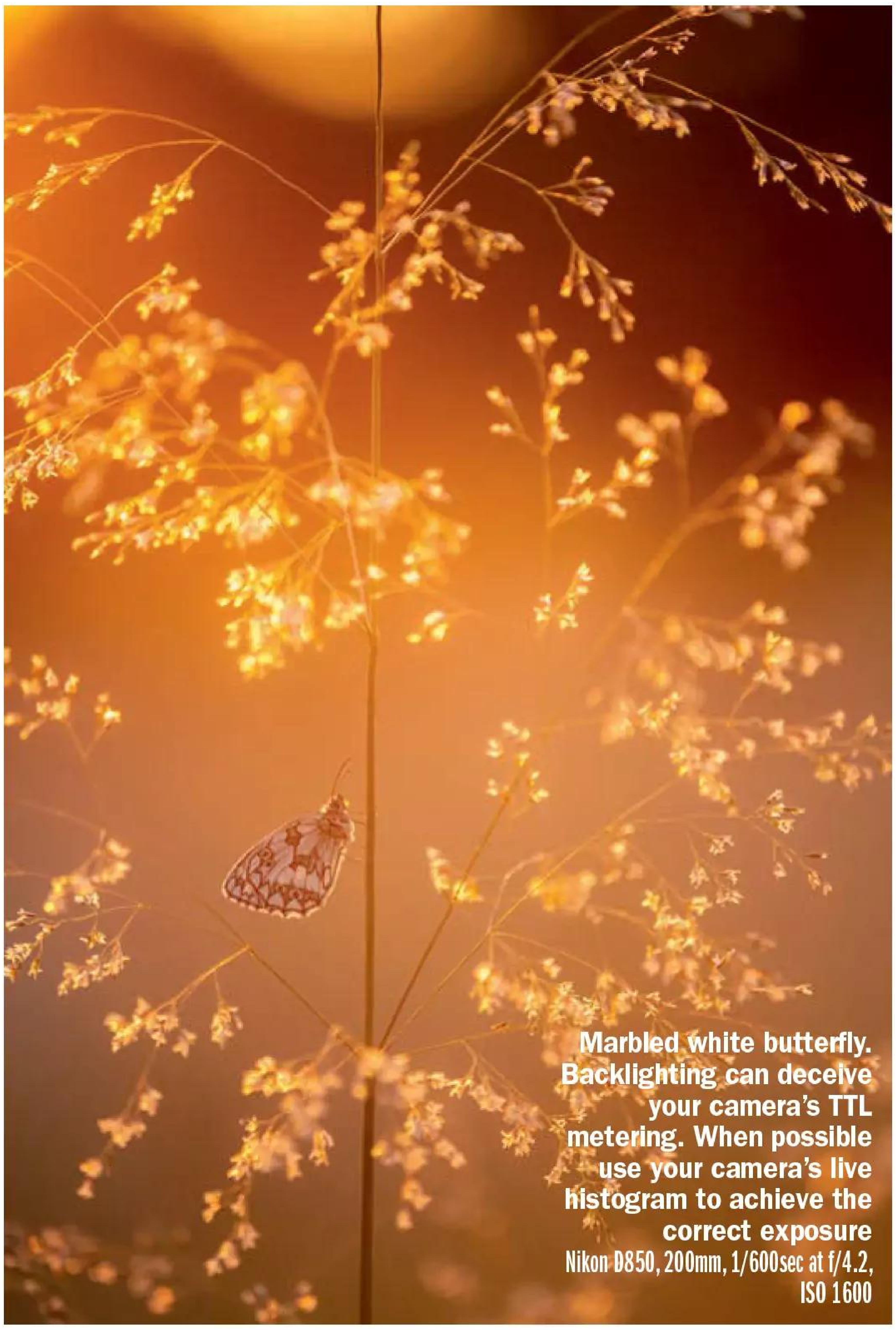
Your camera's multi-segment metering is normally reliable, but when photographing high-contrast scenes or a dark subject against a light background (or vice versa), your camera is more likely to be deceived. For added precision, switch to spot metering. In this mode, your camera will base its reading from a tiny area of the frame (typically 1-4%). The spot is typically linked to the AF point you select. The trick is to position the spot over the correct area.

Zebra patterns

Similar to highlights alert, some cameras have a zebra-pattern function where the camera overlays stripes on the image to show any area that is likely to overexpose. It is most common for videography, but on some models it is an option for stills. Set the Zebra setting to 100+ and then adjust exposure so the pattern does not appear anywhere within the composition to ensure highlights aren't clipped.

Bracket your exposures

One method to guarantee correct exposure is to bracket – a popular technique among film photographers. Bracketing is the process of taking several frames of the same scene using different levels of exposure to ensure one correct result. Most cameras have a dedicated Auto Exposure Bracketing (AEB) function where you can set the number of frames and exposure increment and the camera will than capture the sequence.



Marbled white butterfly. Backlighting can deceive your camera's TTL metering. When possible use your camera's live histogram to achieve the correct exposure

Nikon D850, 200mm, 1/600sec at f/4.2, ISO 1600

Why use spot metering?

In most situations, I advise selecting your camera's most sophisticated metering pattern (often named Evaluative or Matrix). This will do the hard work for you. Using this, the camera will take multiple light readings from across the frame and average them out to produce a correct exposure. However, metering systems can be deceived, particularly with back-lit and high-contrast scenes or when you shoot a light subject against a dark background or vice versa. You can consult your histogram and apply exposure compensation to correct errors. But for accuracy, try spot metering.

Spot metering allows you to expose for a tiny portion of the frame (typically 1-4%), without light, contrast or darkness in other areas influencing the result. Unless you are adjusting settings manually, you may need to 'lock' exposure when spot metering to prevent settings from changing if you recompose. Most cameras have an Auto Exposure Lock (AE-L) button on the back (or a button you can customise to do this) which allows you to lock exposure settings until you press the button again.

Correct exposure extends far beyond the process of capturing light accurately. Once you understand it, you can expose creatively – creating dramatic silhouettes by underexposing subjects, or high-key results by making shots brighter. Exposure will influence the mood of your shots. You can imply subject motion by using a long exposure to blur movement. Or you may wish to generate a fast shutter speed to suspend action. Anything is possible once you've mastered exposure. AP

Exposing to the right – is it still relevant?

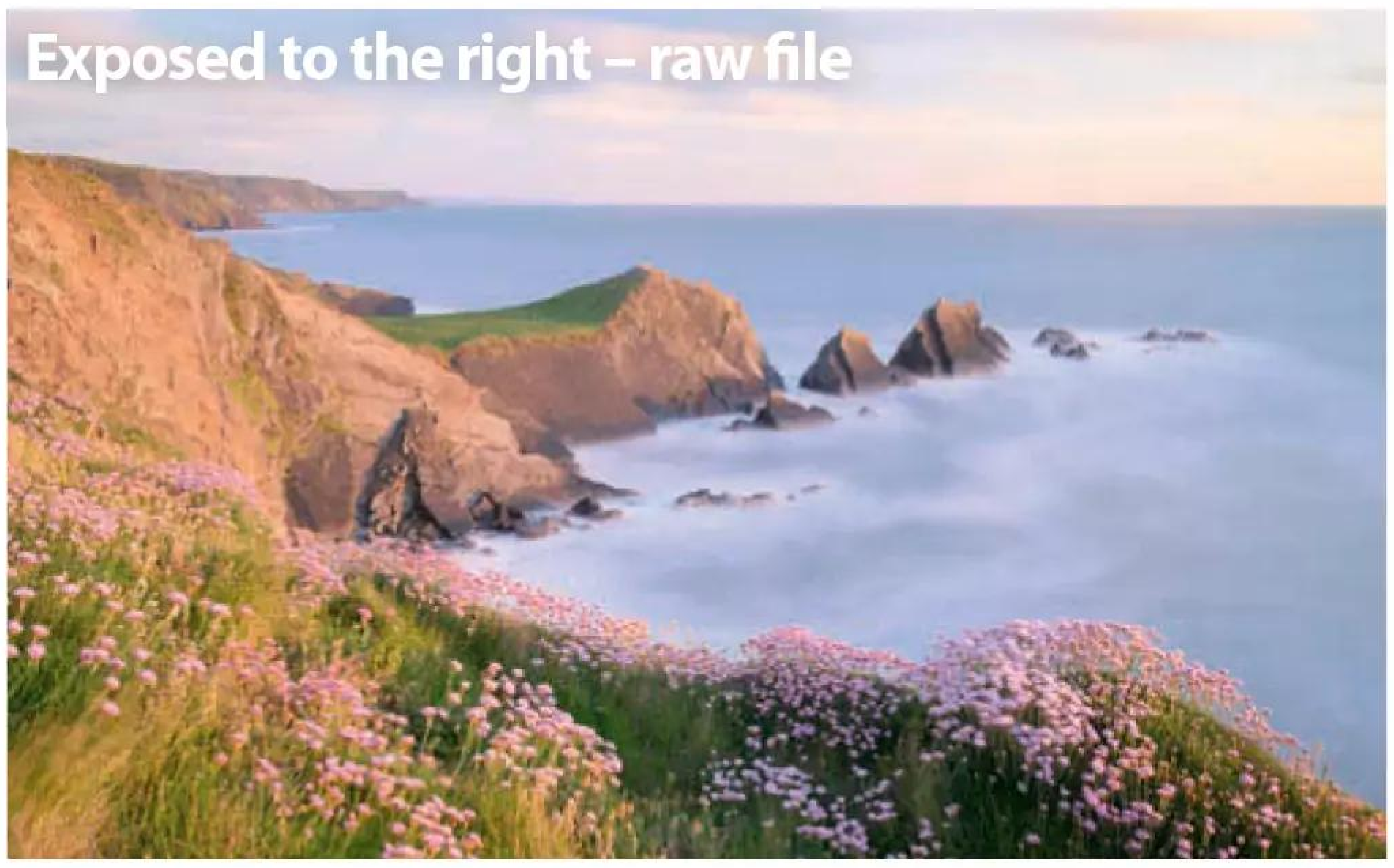
EXPOSING to the right (ETTR) is a raw-only exposure technique, where you push exposure to the right of the histogram as far as possible, without any clipping occurring. Technically speaking, you are overexposing the file, but without sacrificing any highlight detail. It is best to do this in conjunction with your live histogram, applying positive compensation incrementally until you see the brightest pixels nudge up to the far right of the graph.

But why would you deliberately expose incorrectly? Well, sensors are linear devices and they capture more tonal information – and less noise – in the brightest stops. Although ETTR images will look bright and washed-out on the back of the camera, during processing you can adjust the black and white points, contrast and overall exposure to produce a natural-looking, correctly exposed result.

Bigger, cleaner files

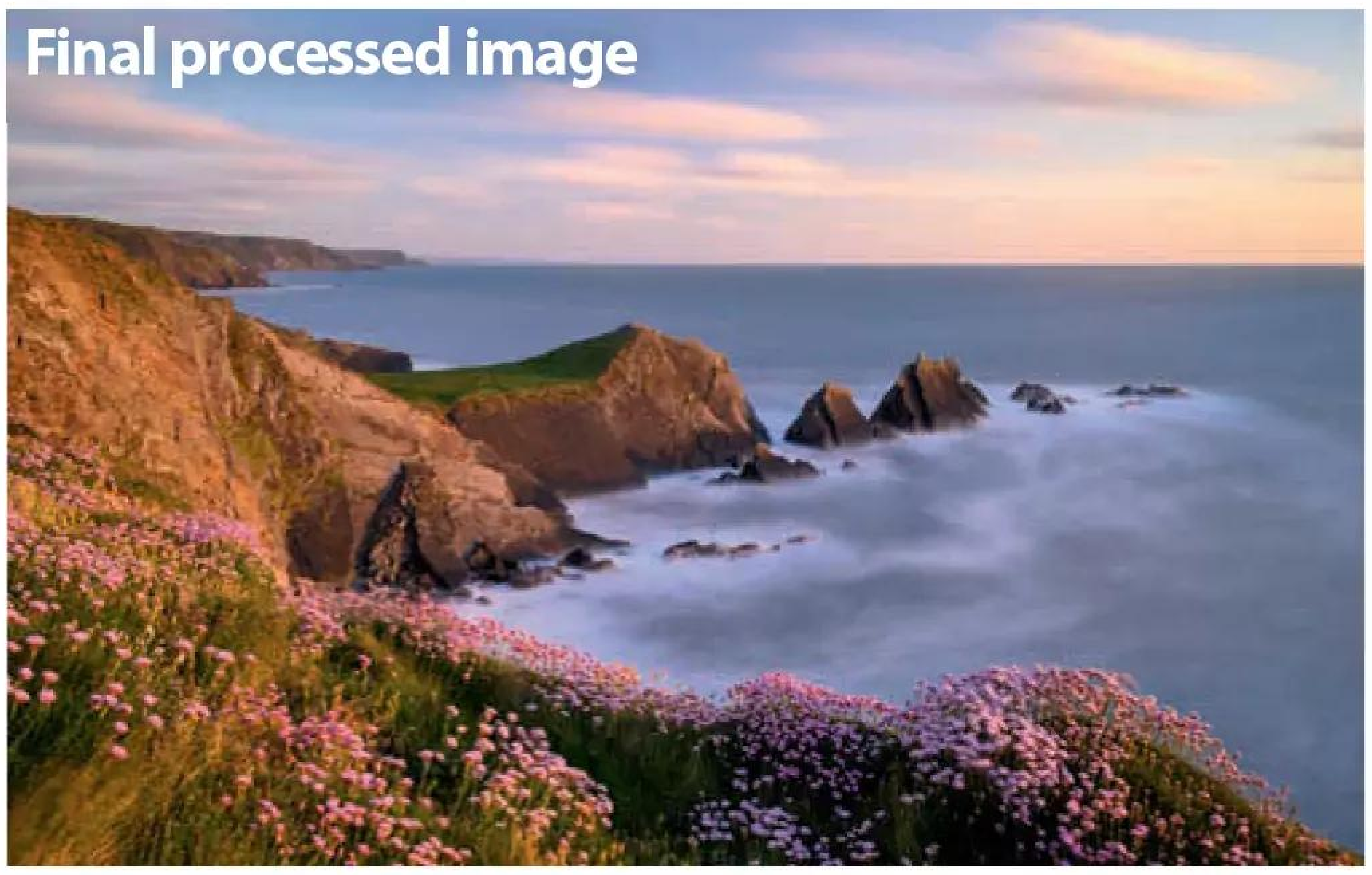
ETTR images tend to be bigger, cleaner files as they are capturing more data, and should possess smoother tonal transitions. As a result, they will reproduce better. However, it is fair to say that ETTR is less important than it once was. The latest generation of cameras capture more tonal levels and have cleaner shadow detail. Therefore, while it is still good practice to avoid underexposure, raw files tend to be more forgiving now. I don't obsess over ETTR, but when practical, I do push my exposure to the right – it makes sense to maximise quality.

However, ETTR isn't easily applied to all subjects. For example, when photographing action, like wildlife, you will rarely have time to be so precise with your exposure. Lengthening exposure is also rarely practical when photographing moving subjects or shooting handheld.



Exposed to the right – raw file

ETTR images look washed-out on the LCD, but capture more tonal detail



Final processed image

Crowns engine houses, Botallack, West Cornwall
Nikon Z7, 49mm, 3sec at f/11, ISO 100

James Abbott

James is a landscape and portrait photographer based in Cambridge. He's also a freelance journalist and editor specialising in photography techniques, tutorials and reviews. See **www.jamesaphoto.co.uk**

KIT LIST

▲ ExpoDisc 2.0

This white balance tool comes in several filter-thread sizes and attaches to the front of lenses to provide a quick and easy way to set a custom white balance and to set a perfect exposure based on 18% grey.

▲ X-Rite ColorChecker Passport Photo 2

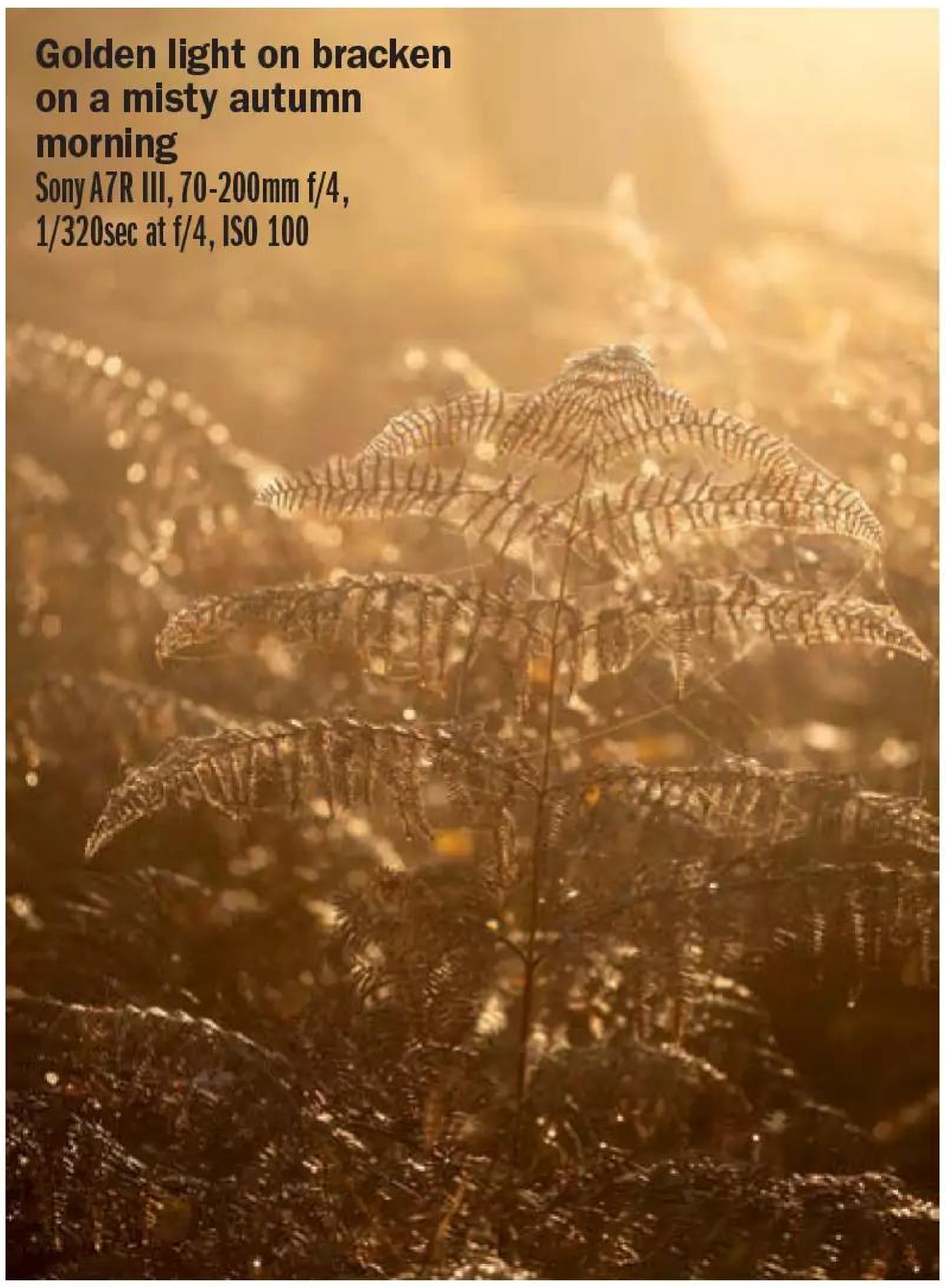
This pocket-size colour reference comes in a small hard case to keep the colour patches safe in your bag, and includes an 18% grey and a white balance target. This is a great tool in the studio and on location.

▲ Lastolite Ezybalance

This foldable accessory provides a white surface on one side and 18% reflectance grey on the other for accurate manual white balance and exposure. The 30cm option is small enough to take anywhere.

EXCEPT WHERE STATED OTHERWISE, ALL PICTURES © JAMES ABBOTT

The golden hour can be a tricky time to select the correct WB setting
Sony A7R III, 16-35mm, 13sec at f/13, ISO 100



Golden light on bracken on a misty autumn morning
Sony A7R III, 70-200mm f/4, 1/320sec at f/4, ISO 100

The Shard during twilight with a mix of light sources
Nikon D610, 16-35mm, 1sec at f/11, ISO 100

Get your **whites right**

Guarantee perfect colours in-camera for every shot. **James Abbott** explains why white balance still matters

In photography, everything is about balance – from composition and exposure to colour – and a tiny tip of the scales can often produce less-than-desirable results. White balance certainly falls into this category, and remains at the forefront of how the colours in your images are balanced and, indeed, how successfully your colour images convert to black & white. Colour balance, in a nutshell, can make or break an image.

In a photographic world where so much can be adjusted post-capture, the temptation can be to shoot now and fix later, but whether you shoot images in raw or JPEG, there are many reasons why setting the correct white balance at the point of capture is the best way to work.

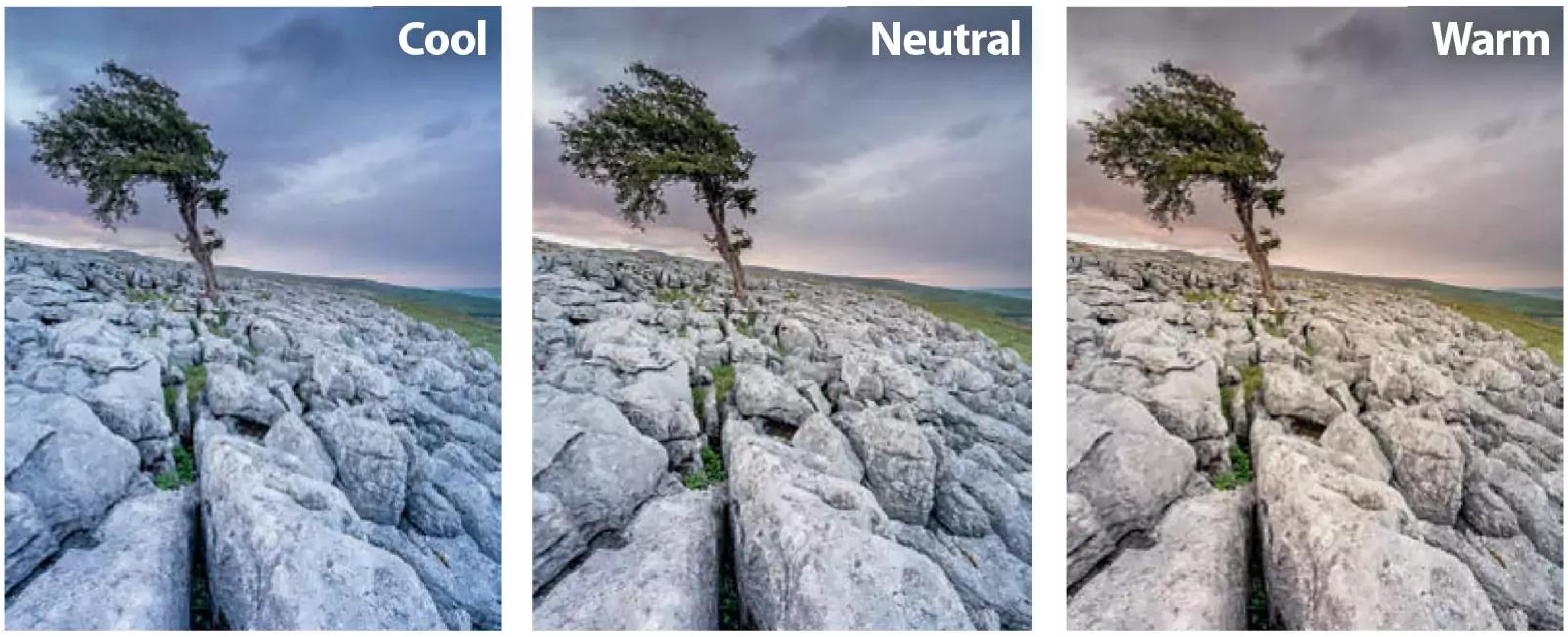
What is white balance?

White balance is a setting that has been available to video cameras for decades, but it was the advent of digital photography that brought the setting to stills cameras. Previously, photographers would use either daylight or tungsten-balanced film, with the former being used in conjunction with corrective screw-in filters for other light sources such as fluorescent lights. The white balance settings available on most cameras include Auto, Daylight, Incandescent/Tungsten, Fluorescent, Flash, Cloudy, Shade, Custom and Colour Temperature. The latter allows you to set white balance manually in kelvins and is most useful for situations such as correcting white balance in-camera when shooting with Big Stoppers, which typically add strong colour casts to images.

In reality, though, you don't need all these settings and the sheer number of them makes white balance appear to be much more complicated than it really is. Going back to shooting film, just two types of film and one or two corrective filters for the two types of fluorescent lights were all you needed

Cool, warm and just right

ONE OF the advantages of white balance is that when used creatively, it can change the overall look and feel of images. In these examples, you'll see how simply using the Temperature slider in Lightroom or ACR can be used to make the images look colder (bluer) or warmer (yellower). To maintain realistic-looking results don't push the slider too far because you'll end up with an unattractive colour cast rather than making the shot look like it was taken at the blue hour or the earlier part of a sunset where the light appears warm.



and this simplicity can be applied to digital photography alongside some more advanced methods of ensuring correct colours.

White balance ensures that white or neutral tones are represented as white or neutral, respectively, regardless of the light source used to illuminate the scene. By simply setting the correct white balance according to the light source or in some cases weather conditions, the image will be free from colour casts.

Avoid colour casts

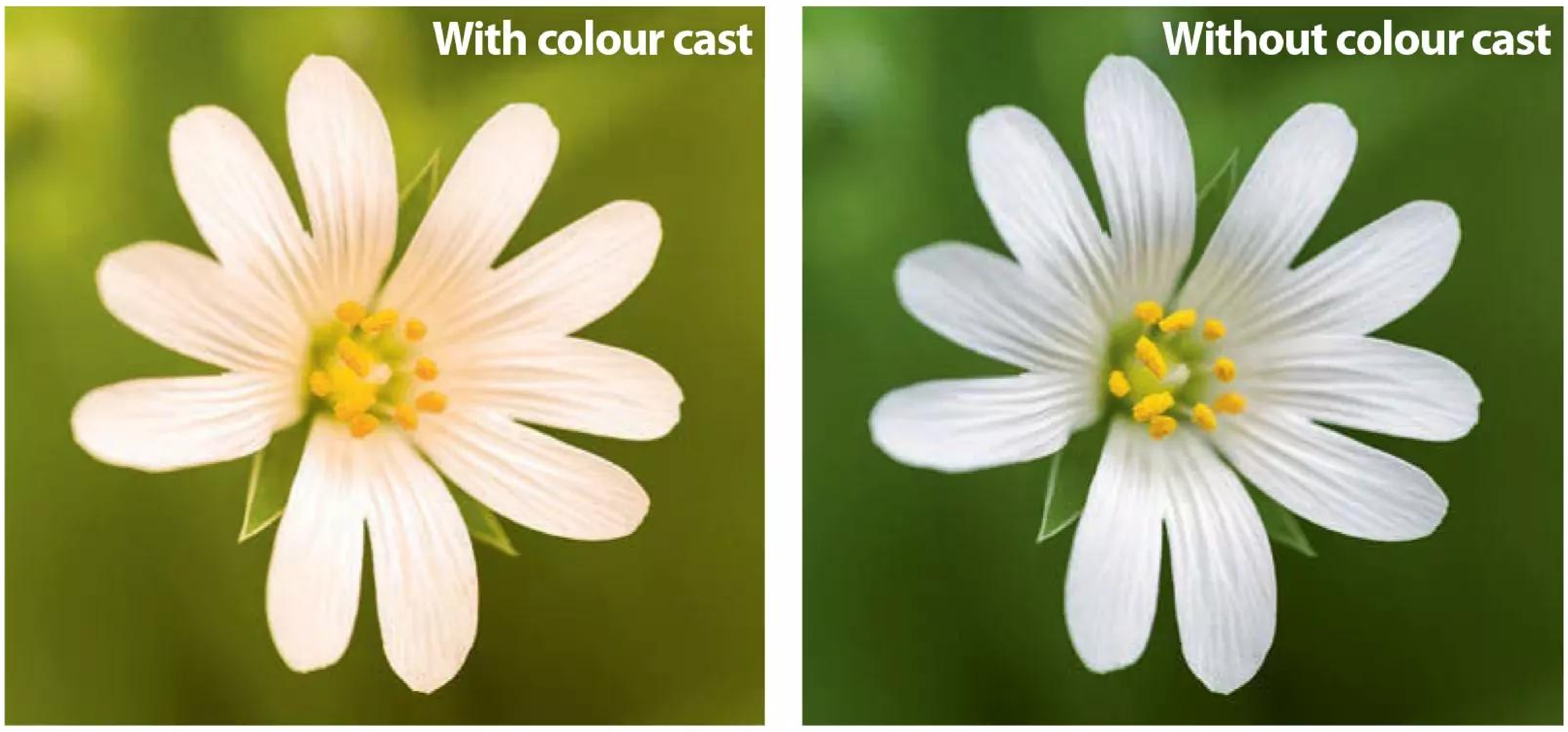
Think about when you're outside at night and you look at your house; the light inside appears yellow, but when you're in a room at home the light appears white. This occurs because the eyes adjust to colour temperature automatically. When you're outside at night your eyes will have adjusted to the ambient light, which is why you would now see the colour of the light source.

Cameras, on the other hand, need to be told how to 'see' and record light correctly to avoid colour casts. A colour cast is simply a colour shift across the whole or part of an image which gives it an unattractive tinted appearance. Colour casts typically occur when you take an image with the camera set to the incorrect white balance. For instance, shooting indoors under fluorescent light but with Daylight white balance set gives off a greenish light. Since the camera is set to Daylight, which is for 'white' light, the camera will record the colour temperature of the artificial light source rather than neutralising it. If you were to shoot outside in the daytime and had white balance set to Incandescent, the colour cast would be blue.

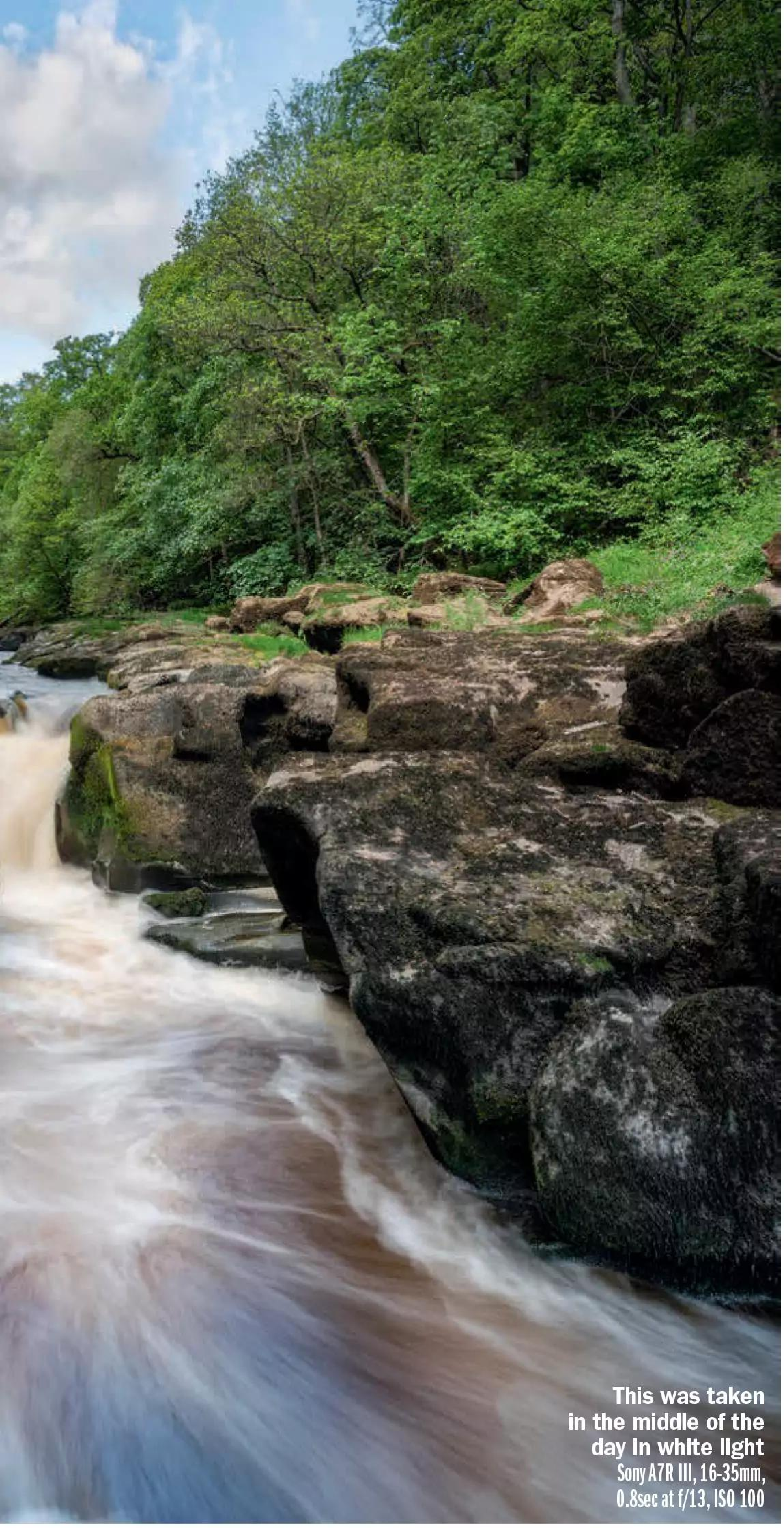
With the exception of shooting indoors, where setting the correct white balance for the light source is essential to avoid a colour cast, using Daylight white balance will see you through the vast majority of situations. You'll notice that your camera has settings including Shade and Cloudy, but quite often these will warm your images up too much. In the majority of cases, photographers use these settings to creatively warm up their shots in-camera, so they can see the result on the LCD screen. If you're shooting raw you can, of course, change white balance and warm images up or cool them down during post-processing, and this is a tried and tested method of creatively using white balance.

Raw vs JPEG

When shooting in raw it really doesn't matter what the white



There are many ways to correct a colour cast – from getting it right in camera to fixing it in post-production



This was taken in the middle of the day in white light
Sony A7R III, 16-35mm, 0.8sec at f/13, ISO 100

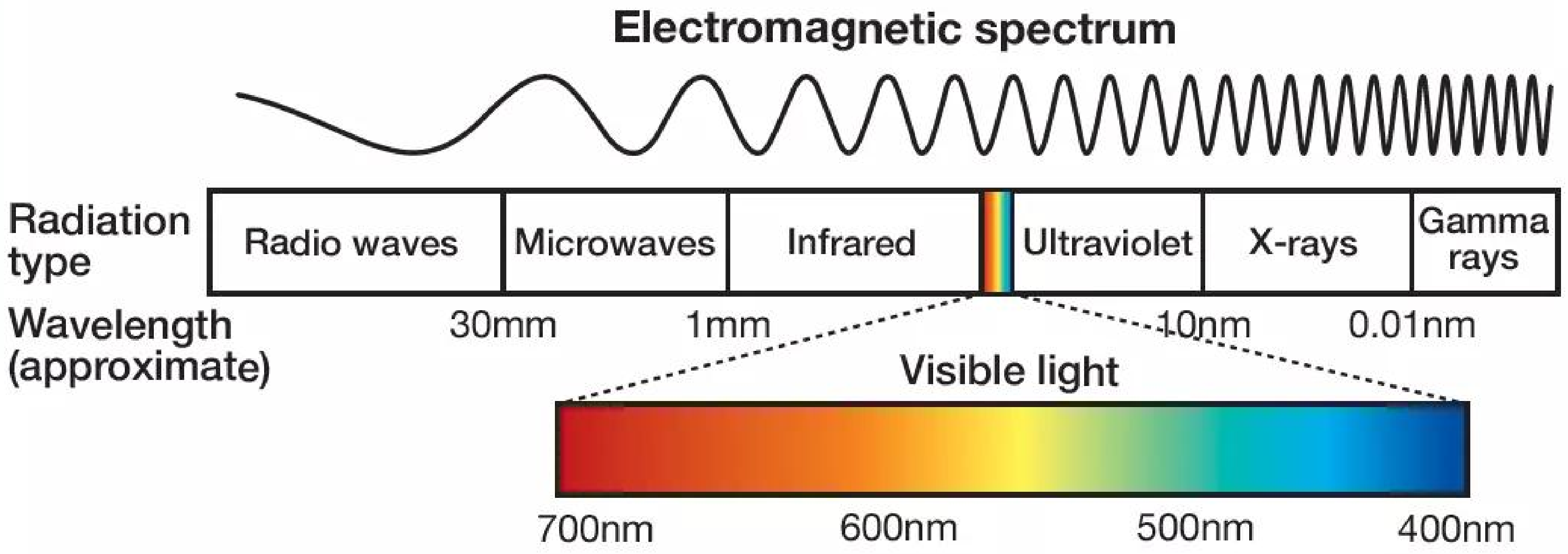
balance is set to because you can easily correct it during post-processing without any detrimental effect on image quality. However, it's still best to have white balance set correctly while shooting because it makes reviewing images on the LCD screen more effective since colours look correct.

When shooting JPEGs, on the other hand, it's much more imperative to set the correct white balance – and especially if you tend not to edit your images. However, the availability of the Camera Raw filter in Photoshop does mean that you can change white balance as easily as you would with a raw file, but it remains better to set the correct white balance at the point of capture because you're not manipulating the pixels that make up the image.

Working in difficult conditions

The most difficult conditions you'll ever find yourself working in are those where there are mixed light sources. This is problematic because you have two or more light sources with different

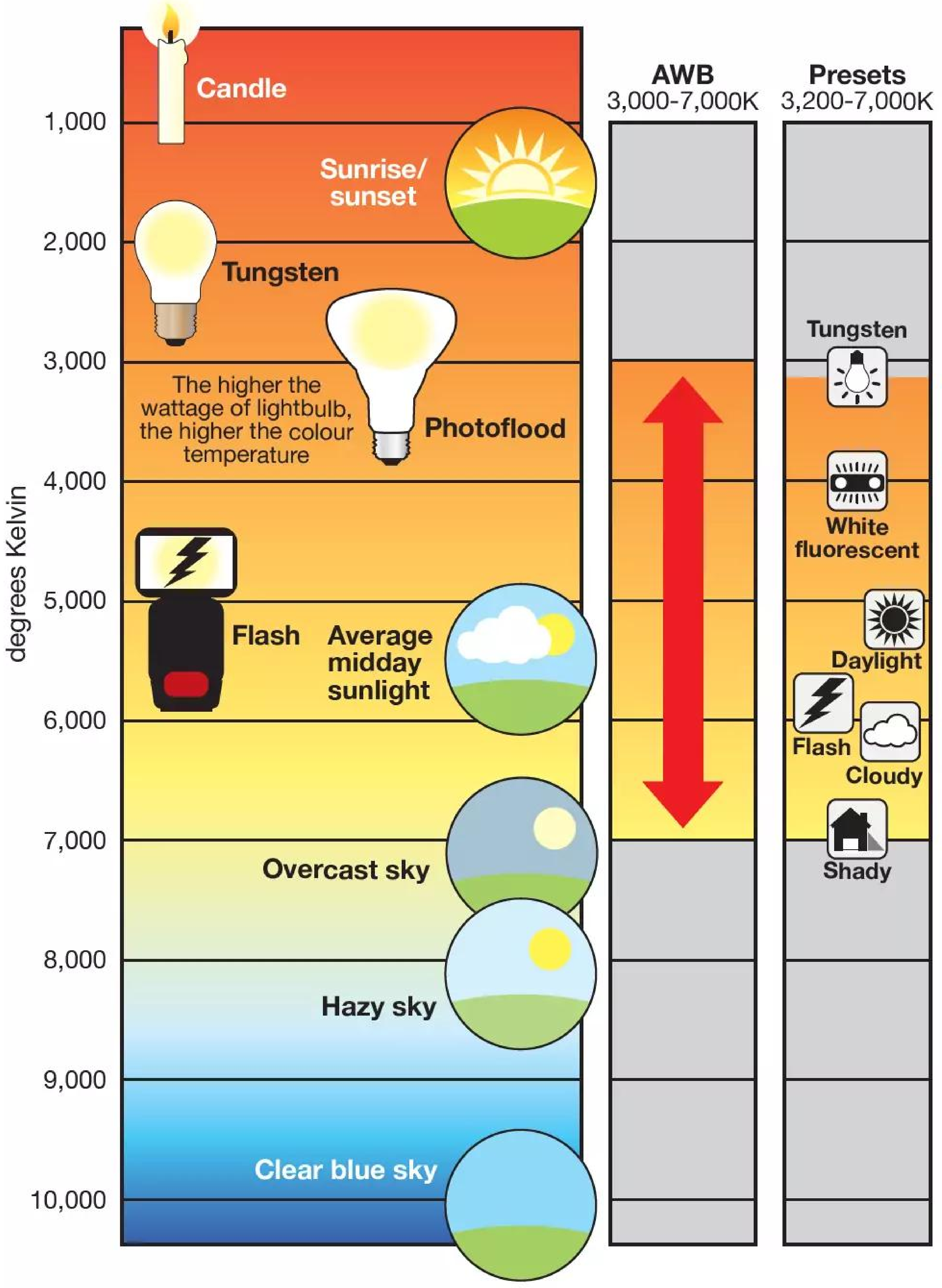
The **visible light** spectrum


Electromagnetic spectrum
Radiation type
Radio waves
Microwaves
Infrared
Ultraviolet
X-rays
Gamma rays
Wavelength (approximate)
30mm
1mm
10nm
0.01nm
Visible light
700nm
600nm
500nm
400nm

LIGHT is a form of electromagnetic energy, and the visible spectrum is made up of violet, blue, green, yellow and red. These colours combine to make white light, which is typically what you'd get outdoors around midday and from flash.

The colour temperature of light obviously falls within this spectrum, and understanding how white light is made up of these constituent colours can be useful when working with different light sources, coloured gels, and when shooting at sunrise and sunset.

Colour temperature and the Kelvin scale


degrees Kelvin
1,000
2,000
3,000
4,000
5,000
6,000
7,000
8,000
9,000
10,000
Candle
Sunrise/ sunset
Tungsten
The higher the wattage of lightbulb, the higher the colour temperature
Photoflood
Flash
Average midday sunlight
Overcast sky
Hazy sky
Clear blue sky
AWB
3,000-7,000K
Presets
3,200-7,000K
Tungsten
White fluorescent
Daylight
Flash
Cloudy
Shady

ILLUSTRATIONS BY MAGGIE NELSON

COLOUR temperature is measured in kelvin – a scientific measurement of temperature that starts at absolute zero, with no minus figures like Celsius or Fahrenheit have. At one end of the scale, orange light is at 1000K, going all the way up to blue light at 10,000K, as the diagram above shows. We often refer to colour temperature and light sources from a subjective point of view: red, orange and yellow light are referred to as hot, while blue or green light are considered cold, but the reality in terms of kelvin is actually the opposite.

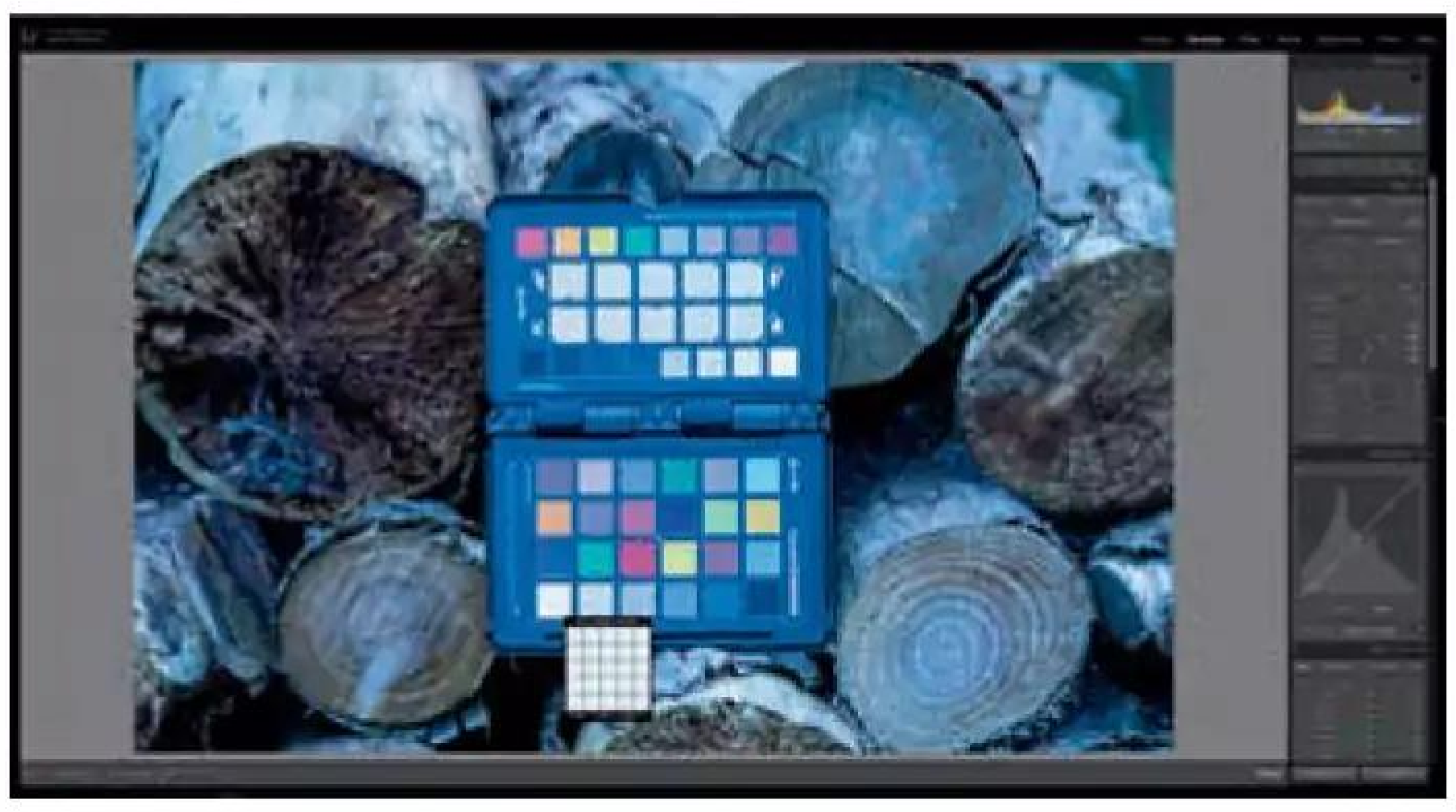
colour temperatures, and setting a white balance preset to deal with one light source means that the other light source will create a colour cast.

There are two main ways to deal with this: one is to use Auto white balance, and the other is to create a custom white balance. Auto white balance will assess the scene and attempt to come up with a white balance that neutralises the light in the scene, and in most cases will do a reasonable job – but more often than not it's far from perfect because it creates an average. In fact, Auto white balance can be a tempting setting to use in many, if not all situations, because as the name suggests it sets the white balance automatically, so that's one less thing to worry about. The problem is that it simply tries to neutralise light, so if you're shooting a sunrise or sunset, for instance, the image will appear subdued or even blue.

The most effective way to deal with mixed lighting is to set a custom white balance where you take a shot of a white card (could also be a piece of A4 plain white paper) under the light conditions in which you'll be shooting. You'll find that this will provide even more reliable results than using the presets. AP

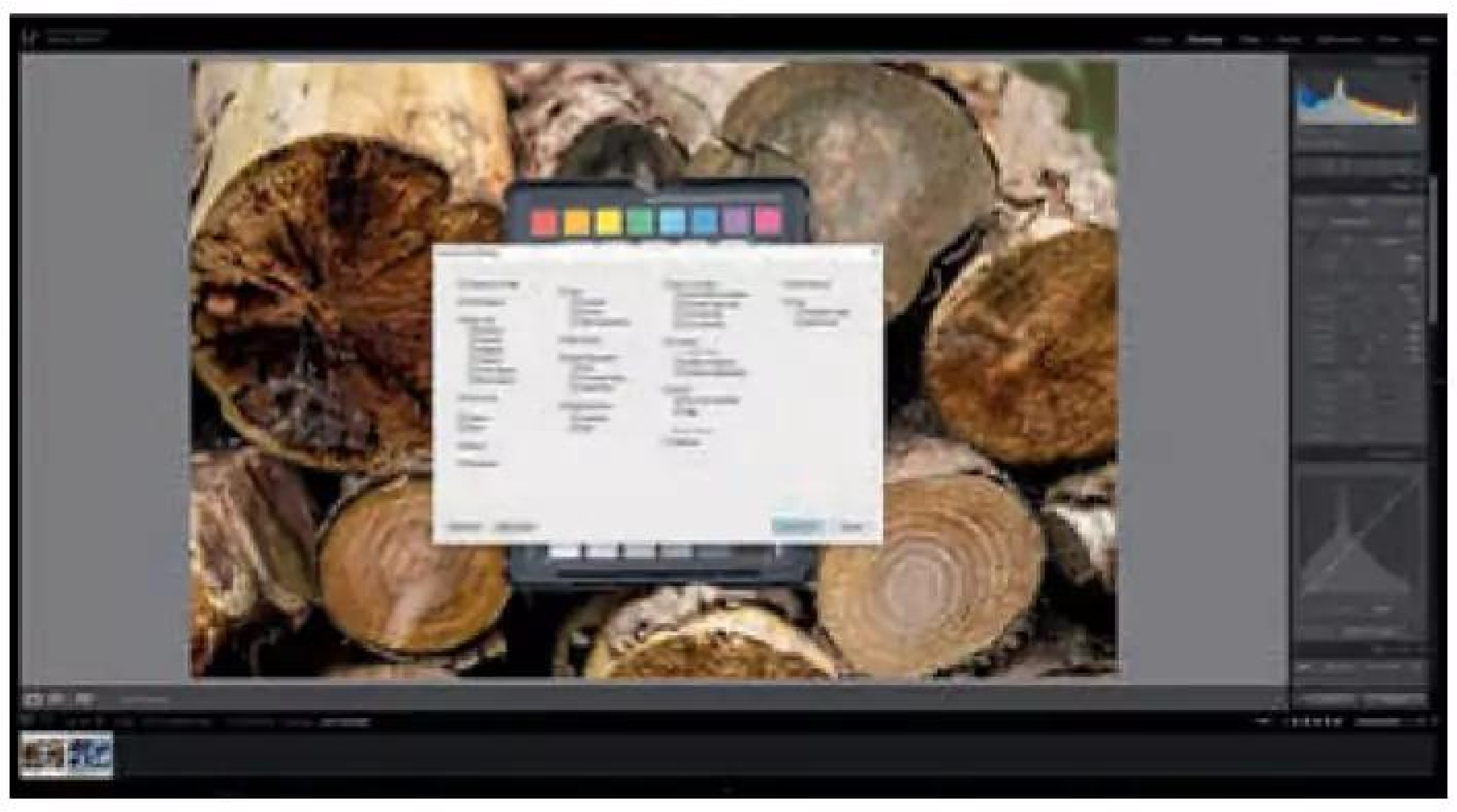
The WB setting of a white background is easy to correct
Nikon D610, 50mm, 1/125sec at f/8, ISO 100

HOW TO USE A COLOUR CHECKER



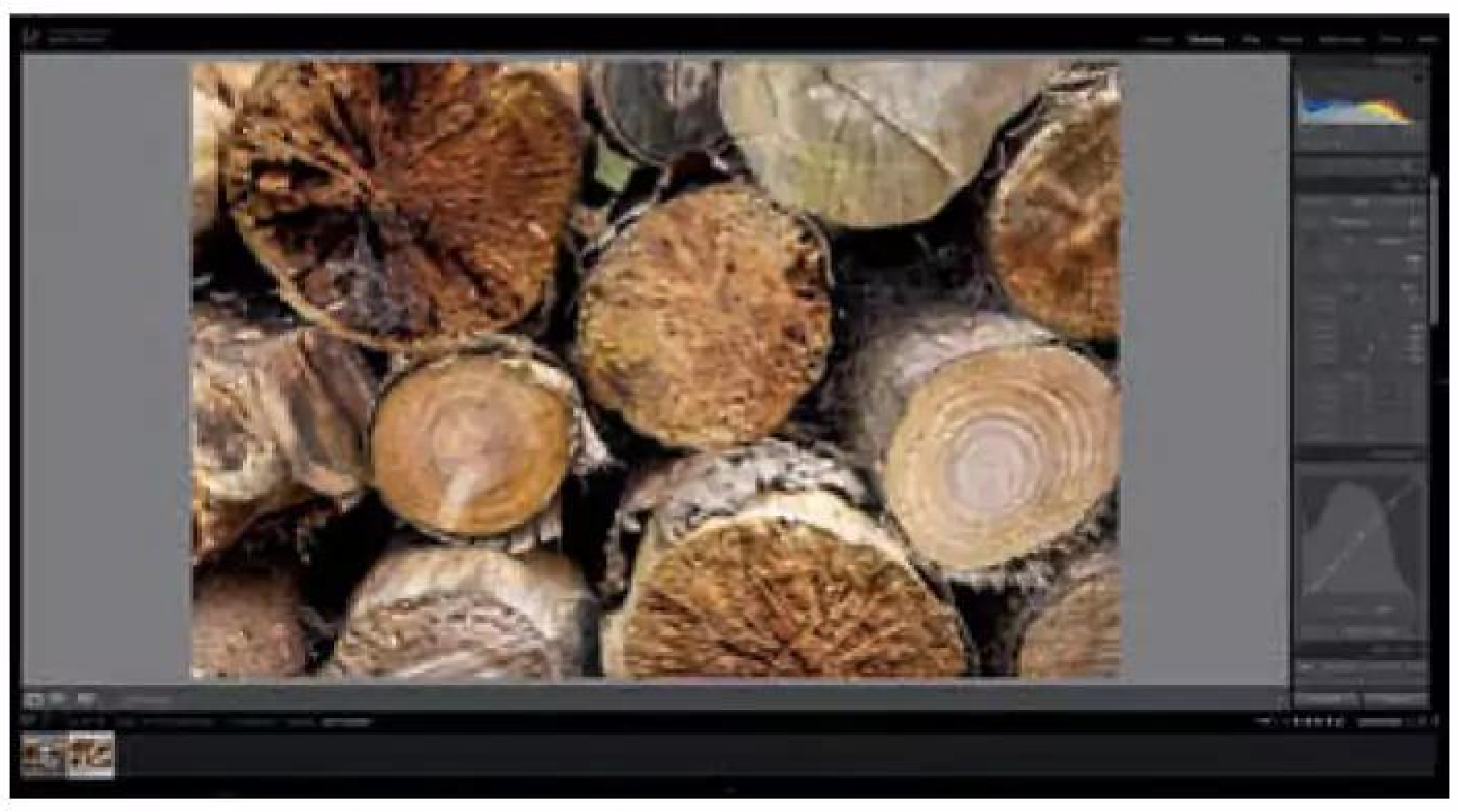
1 Take your shots

Set up your shot and take one with the colour checker in the scene, then remove and continue shooting. Load your images into your raw-editing software and select the one with the colour checker before using the white balance dropper to click on the white square.



2 Copy settings

Keep the reference image selected, hold down the Shift key and select the main image(s). Click on the Sync button making sure WB is checked. Click Synchronize or OK. This will copy the white balance settings so that your images without the reference card adjust too.



3 Get perfect white balance

The result will be 100% perfect white balance. The colour checker is great for studio use because studio flash colour temperature varies from one brand to the next. The colour checker is also great for any subject under any lighting – even when using a Big Stopper.

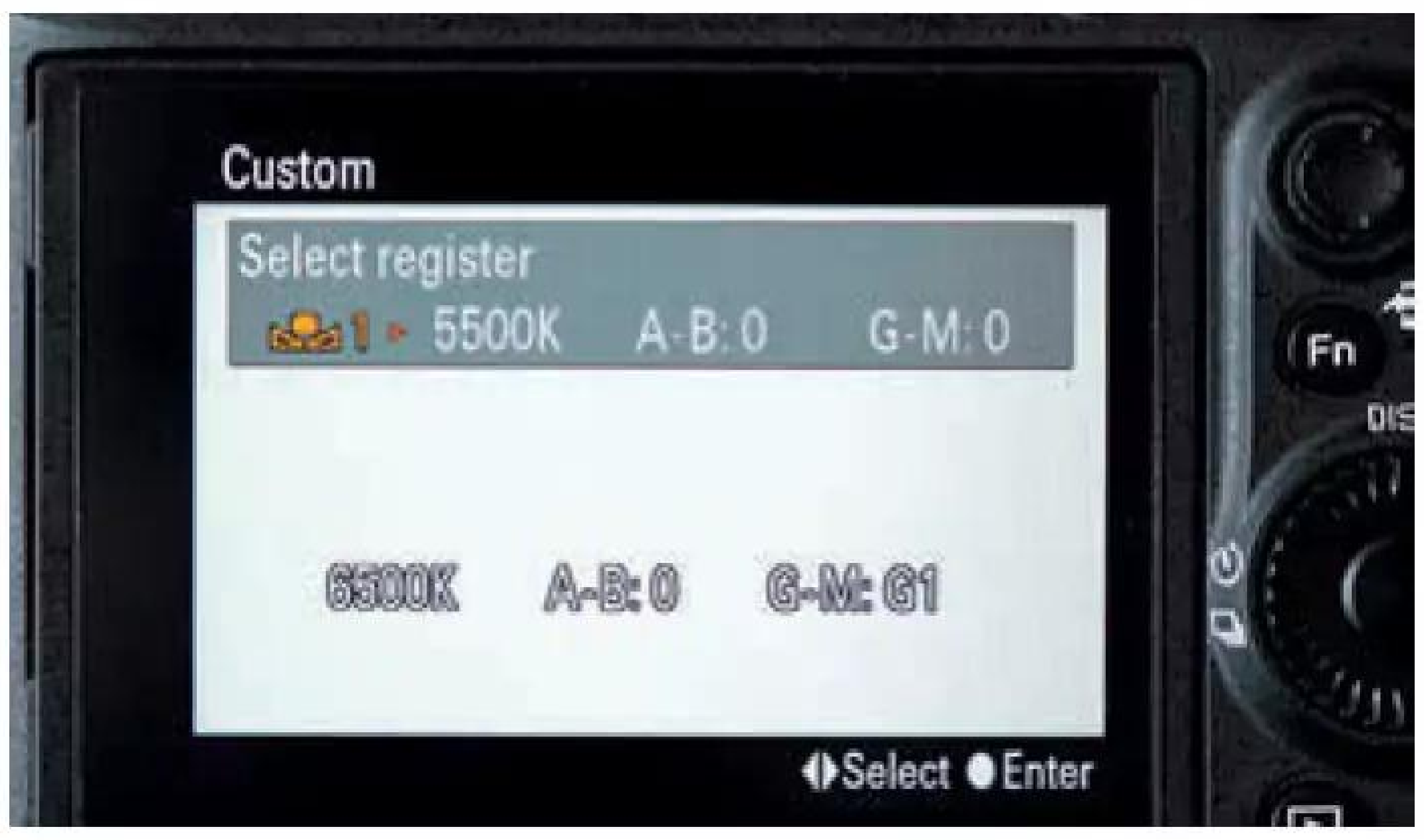
HOW TO SET A CUSTOM WHITE BALANCE

1 Select Custom

Enter the menu or use the relevant direct access button to bring up the white balance options on the LCD screen. Scroll down to Custom, usually at the bottom, and press OK. This will take you through to a screen where you need to shoot a reference image.

2 Fill the frame

The camera will now ask you to shoot a reference image of something white. Use a sheet of white paper and place it in front of the camera. Look through the viewfinder and fill the frame before pressing the shutter button or another button as directed by the camera.



3 Confirm custom setting

Once the reference image has been taken, most cameras will take you through to a confirmation screen to accept the custom setting you've created. A custom setting should be created each time you shoot because they are specific to the light conditions at that time.

When shooting portraits against strong colours, use manual white balance otherwise incorrect skin tones may result
Nikon D610, 35mm, 1/400sec at f/2.5, ISO 100

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James Abbott
James is an editorial and advertising photographer producing eye-catching landscape and portrait images for editorial, commercial and private clients. He's also a freelance journalist and editor specialising in photography techniques, tutorials and reviews.
See more of his work at **www.jamesaphoto.co.uk**

Make ISO work for you

Shooting at high-ISO settings can be a necessity. **James Abbott** explains how you can embrace high ISO while maintaining optimal image quality

ALL PICTURES © JAMES ABBOTT

1 What is ISO?

Originally ISO related to film speed; it refers to the sensitivity of the emulsion to light. Digital sensors work in a similar, but different way. With digital sensors, when shooting at lower ISO settings the sensor appears to be less sensitive to light and image quality is better, while at higher settings noise becomes more apparent as the sensor becomes more sensitive to light. The reality, however, is that digital cameras have a single base ISO setting, which is often ISO 100, and when increased or decreased, a software algorithm simulates an effective sensitivity of the sensor.

ILFORD
HP5
PLUS
400
BLACK & WHITE FILM

2 Test your camera's ISO performance

The best ways to identify the highest ISO setting you're happy to use is to do an ISO test. Set your camera up on a tripod in aperture-priority mode and take a series of shots at all the native ISO settings. Shoot in raw and load the images into Lightroom or your preferred raw-editing software and make sure all noise reduction is switched off. From this you can see exactly where image quality becomes unusable.

ISO
ISO 800
SONY

Frozen grass in winter, shot with a high ISO in order to achieve a good level of sharpness across the frame
Nikon D610, 50mm, 1/125sec at f/8, ISO 1600

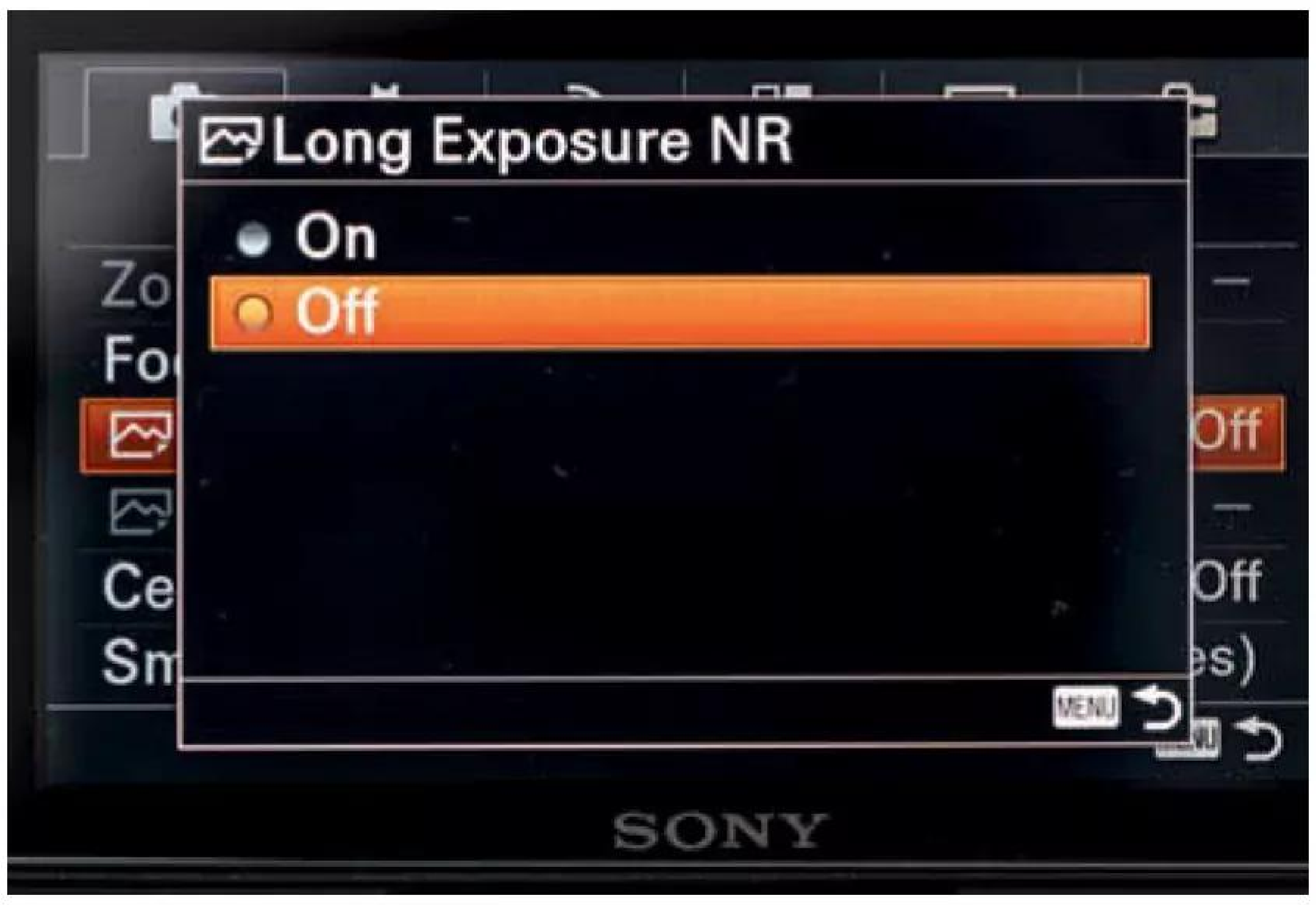
3 The exposure triangle

Working with the simple idea that digital ISO levels are the same as film ISO levels, ISO is part of the exposure triangle that also includes aperture and shutter speed, the combination of which dictates whether an image is correctly under or overexposed.

A stop with shutter speed and ISO is easy to understand; you simply double or halve the number. So you might go from ISO 100 to 200 to 400 and so on, while with shutter speed you could go from 1/125sec to 1/60sec to 1/30sec, etc. Aperture is however different, and the most common are f/1.4, f/2, f/2.8, f/4, f/5.6, f/8, f/11, f/16 and f/22.

4 Effect of high ISO on sharpness

As ISO is increased you will see more grain in images. This will break up sharp subject edges and reduce fine detail, which has the effect of softening images. There will always be times when you have to shoot at extremely high settings, but the trade-off here is achieving the desired combination of shutter speed and aperture at the expense of overall image quality.



5 Turn off long-exposure noise reduction when shooting in raw

When shooting in raw it pays to turn off long-exposure noise reduction because the processing time can be as long as the exposure itself. So, a two-minute exposure would require roughly two minutes of processing. Noise reduction in this situation is best applied to images in post-production – for more control and to save time when shooting.

6 Reciprocity failure no longer applies

Reciprocity is the idea that all exposures are mathematically equal, so if you increase ISO, for example, by two stops, you need to decrease the shutter speed or aperture by two stops or by one stop each to maintain the same exposure. With film, in general, reciprocity only works with exposures between 1sec and 1/1000sec owing to the limitations in film emulsions. But with digital, reciprocity works at all shutter speeds without detail problems or colour shifts.

SONY
α 7III
FE 3.5-5.6/28-70 OSS

The Sony A7 III is an ISO-invariant camera

7 ISO invariant sensors

At a basic level, ISO invariance is when you can achieve a near-identical level of noise regardless of whether you increase ISO in-camera or lighten an underexposed image in post-processing. So why would you do this? The reason is simply that at lower ISO settings sensors achieve a larger dynamic range, so you can ultimately capture more detail throughout the scene. The downside, however, of shooting at ISO 800 rather than 3200, for instance, is that you won't be able to review your underexposed images on the LCD to check composition and other things. A quick internet search will tell you if your camera is ISO invariant.

8 Use a prime and shoot wide open

'Nifty fifties' are not only often affordable and provide excellent image quality, but their fast maximum aperture of either f/1.8 or f/1.4 also means you can allow more light to enter the lens. So, with this you'll get beautifully out-of-focus backgrounds and in low-light situations, lower ISO and less high-ISO noise – which is a true win-win situation.

SIGMA
50mm 1:1.4 DG ø77

9 Get more light with wideangle lenses

Wideangle lenses by their nature are fast lenses because their wide field of view draws in more of the scene in front of them and more light. Wide aperture settings will increase their light-gathering capabilities, but if you want to keep ISO settings lower you'll be able to do so more effectively with a 28mm lens than an 85mm at the same aperture setting, for instance.

10 When to use Auto ISO

Auto ISO is a handy feature, but one that must be used with caution as it may cause problems. With Auto ISO, on most cameras, you set the minimum and maximum settings, such as ISO 100-1600, and the slowest shutter speed you're willing to use, for example, 1/125sec. The camera will then use the lowest ISO setting possible to maintain at least that shutter speed or faster. Auto ISO should only be used for handheld shooting, and certainly not when using a tripod or ND filters because you'll end up shooting at higher settings than necessary and will not achieve the desired results.

11 Noise and sensor size

Smaller sensor cameras cram in more small pixels than cameras with larger sensors that can accommodate larger pixels. The result is typically cleaner images at equivalent high-ISO settings between Micro Four Thirds and full-frame sensors, for instance. But for most, the choice between these camera formats usually comes down to size, weight, features and functionality over ISO performance.

12 Effect of high ISO on image quality

There are two main types of digital noise: luminance and chroma. Luminance noise appears as grain, while chroma noise is flecks of colour. When shooting in

When light levels are low, the Auto ISO setting can come in handy
Nikon D610, 85mm, 1/160sec at f/2, ISO 1000

raw you'll need to apply noise reduction manually to have more control. When shooting in JPEG, use the in-camera noise reduction. Most cameras offer several levels, so test to see which you prefer.

13 Carry a mini tripod

Mini tripods are pocket size and don't weigh much at all, so they're always worth carrying around with you. These allow you to control the angle of the camera, but you may find that you need to place the camera and mini tripod on a wall or table so that they're not too low to the ground – although, for certain shots, being so close to the ground can work well.

14 The truth about image stabilisation

Whether in-camera or in-lens, camera and lens manufacturers claim that image stabilisation is provided to, say, five stops. This, in theory, means you can shoot at shutter speeds five stops slower than you could without. So with a 50mm lens, even if you were aiming to shoot at 1/125sec, according to manufacturers you'd be able to shoot handheld at 1/4sec. You could indeed, with extremely steady hands and almost yogic breathing, but the reality is that most people can't stay still enough to shoot handheld at such slow shutter speeds.

G
FULL ∞-3m
OPTICAL STEADY SHOT
ON ● ● OFF

Using burst mode can help when shooting at slower shutter speeds
Sony A7R III, 70-200mm, 1/80sec at f/4, ISO 100

15 What's camera shake? Stand firm, keep steady

Camera shake is simply movement of the camera that's captured as blur when the shutter speed is too slow for handholding. When shooting at slower shutter speeds, with or without image stabilisation, stand with your feet shoulder-width apart, keep your elbows tucked into your body and release the shutter as you gently breathe out. Shooting in burst mode can help, too.

16 Shutter speed and handheld shooting

A general rule says shutter speed should match or exceed the focal length of the lens. If shooting at 50mm you need a shutter speed of at least 1/60sec to avoid camera shake. But with telephoto lenses movement is amplified so using faster shutter speeds than the focal length can be beneficial, while with wideangle lenses such as 24mm you don't really want to shoot slower than 1/60sec.

You can get away with lower ISOs when shooting handheld at night in urban areas
Sony A7R III, 16-35mm, 1/50sec at f/2.8, ISO 1600

17 Shooting handheld at night

When shooting handheld in a city or town with artificial light you can actually get away with lower ISO settings than you may think – typically ISO 800-3200 depending on the maximum aperture of your lens. With a fast prime such as f/1.4 you could shoot as low as ISO 400; with f/2.8, 1600; and with f/4, 3200. If shooting in aperture priority, you'll often need between -1.0 and -2.0 of exposure compensation to maintain the natural darkness of the scene.

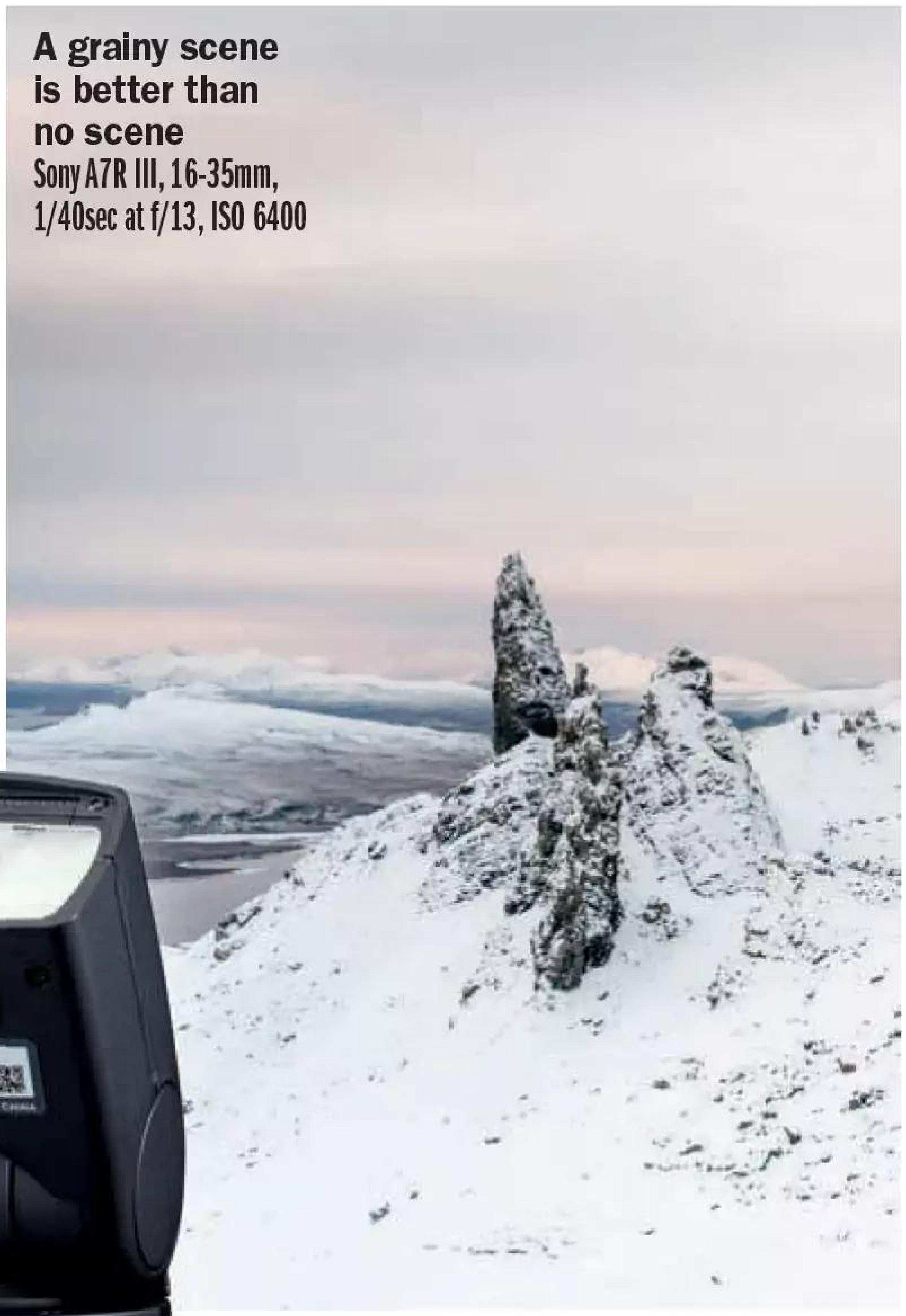
18 Use the AF assist lamp in low light

In most situations, the AF assist lamp will be turned on by default and is simply a light on the front of the camera that illuminates the subject to aid autofocus. If, when in low light the light doesn't come on, you can turn it on within the camera menu system. Some flashguns also feature an infrared AF assist lamp, which can be useful in low-light situations when using flash.

Canon
Canon
Canon
EOS
5D
Mark IV
CANON ZOOM LENS EF 24-105mm 1:4 L IS II USM

19 Better to get a grainy shot than no shot at all

There will be times when you have no means of supporting the camera during a long exposure so you have to shoot handheld. In this situation, is it not better to get a high-ISO shot than no shot at all? The example image was taken at ISO 6400 which resulted in a shutter speed of 1/50sec and allowed for a handheld shot with Image Stabilisation turned on. The reason for this is that the tripod head had frozen during the walk to the location, so this shot was taken before the head was defrosted to guarantee an image.



A grainy scene is better than no scene
Sony A7R III, 16-35mm, 1/40sec at f/13, ISO 6400

20 Don't be afraid to use flash with higher ISO settings

There's a common misconception that when shooting with flash you should keep ISO levels low because all the light you need comes from the flash. But there are times when a higher ISO, such as 800, will mean you can capture more ambient light to obtain a better-exposed background without using a slow shutter speed, and it also allows you to bounce the flash off ceilings while taking in more ambient light for ultimately more natural-looking results.

Balancing a higher ISO with flash power is key for a better overall result

© GETTY IMAGES – NEVIN ITTIKUNNATH XAVIER

This dusk street portrait required a high ISO to reduce risk of camera shake

During the golden hours, sunlight is softer and warmer

© GETTY IMAGES/SHANNON FAGAN

© GETTY IMAGES/THOMAS BRADFORD

Light touch

UNLESS INDICATED OTHERWISE, ALL PICTURES © JOHN WADE

During the course of just 24 hours the colour, intensity and direction of natural light changes dramatically, leading to countless photographic opportunities, says **John Wade**

How many of us really appreciate the different qualities of light during the course of a single day? The reason you might not have noticed how light changes hour by hour is because the human eye is wonderfully adaptable, continually compensating for varying

When the sun is overhead in the middle of the day, the light is harsh and shadows are short

Sunsets are always popular with photographers, and the results can be made even more dramatic in post-production

© GETTY IMAGES/ISTOCKPHOTO - ALAN HILL

conditions. But learn how to see the light, and respond to its subtle changes, and your pictures will improve dramatically.

Colour of light

Natural light is made up of all the colours of the visible spectrum: red, orange, yellow, green, blue, indigo and violet. Each has a different wavelength – short at the blue end of the spectrum, long at the red end. Mix all the colours and we get what we think of as white light. The Earth's atmosphere contains air molecules that scatter light as it passes through them, and they scatter more light at the blue end of the spectrum than at the red end. That's why the sky looks blue for most of the day.

As the sun sinks lower in the sky, its light is forced to pass through a lot more atmosphere than when the sun is overhead. So more of the short wavelength blue part of the spectrum is scattered, leaving the long wavelength red part to dominate. That's why the sun looks red at sunrise and sunset.

The time shortly after sunrise and shortly before sunset is wonderful for all kinds of outdoor photography. These are known as the 'golden hours'. During this time, sunlight is attractively softer and warmer – warm as in its colour, not its actual temperature. Likewise, in the twilight hours when night recedes but before the sun has risen, then again after sunset but

John Wade

Regular AP contributor John Wade is well known for his books and magazine articles on camera history, published in the UK and America. His pictures for this article are a mixture of digital camera images and scans of transparencies from older film cameras. Find him at **www.johnwade.org**

During winter the sun stays low in the sky most of the day, turning particularly dramatic during the golden hours

Shooting against the light makes translucent flowers glow and produces interesting shadows in the foreground

before it is fully dark, there comes another magical time. With the sun now below the horizon, only the shorter blue wavelengths are scattered into the atmosphere, giving a blue-predominant, evenly diffused light. These are known as the 'blue hours'.

So, during the course of any sunny day, starting and ending with the darkness of night, light changes colour like this: black, blue, red, orange, yellow, white, yellow, orange red, blue, black.

Direction of light

When the sun is overhead in the middle of the day, the light is harsh and the shadows are short. It is not usually accepted as a good time for photography, although once you know the limitations, it's possible to exploit them for great pictures. As the sun sinks lower in the sky, its light becomes more directional, and subjects are rendered

KIT LIST

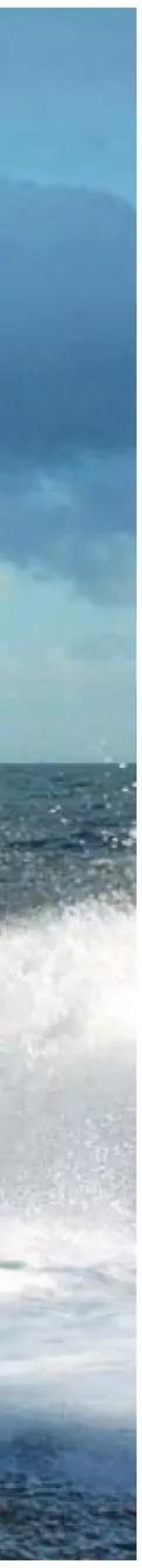
Hitchin
Next Hour
14
Light rain showers and light winds

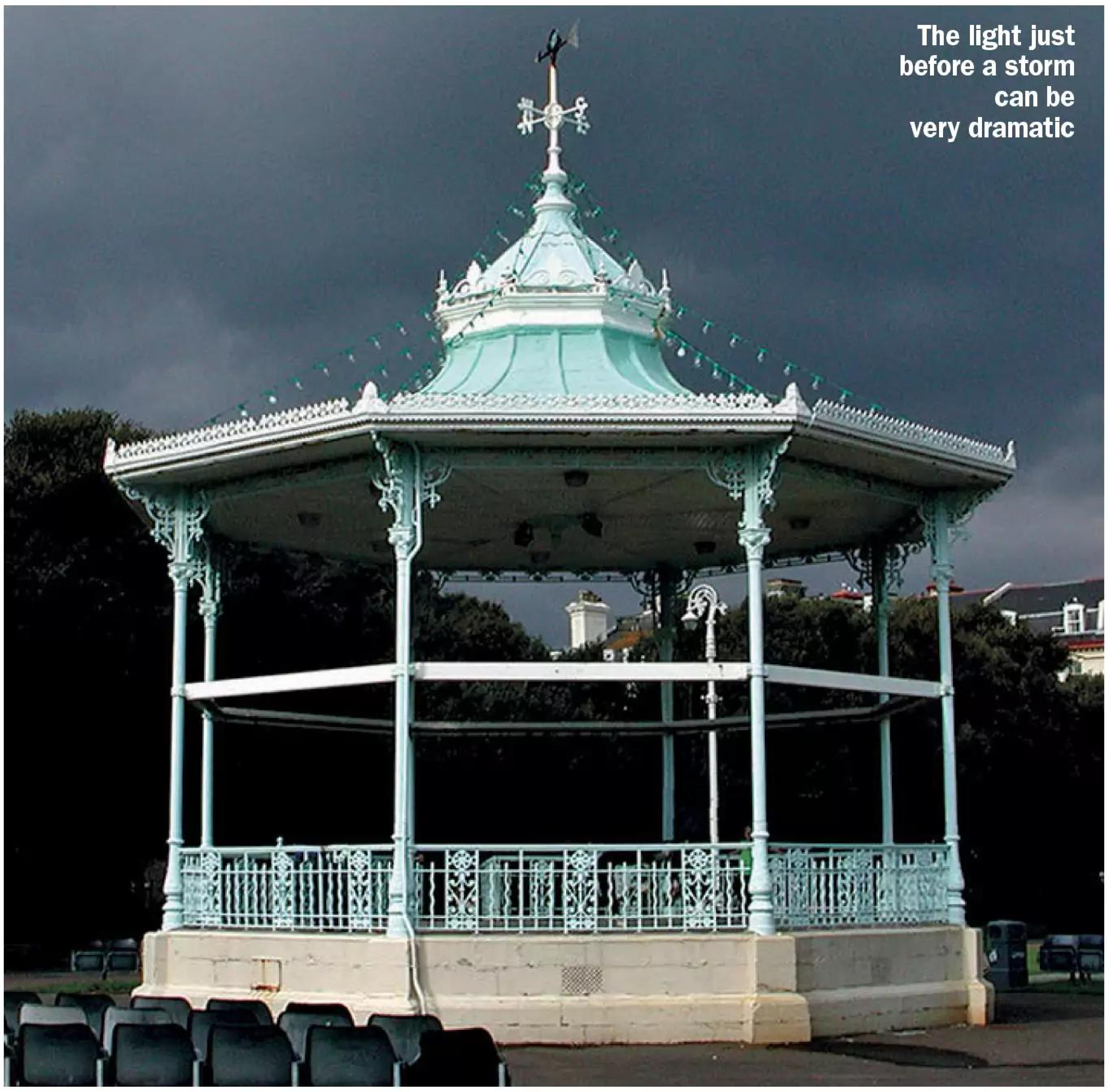
Mobile phone apps

Three apps are of particular use to plan your shoot: The Photographer's Ephemeris, the BBC Weather App, and a compass app (provided with many mobile phones).

Compass

The sun rises in the east, sets in the west and – in the northern hemisphere – travels across the southern sky during any day. A compass helps to anticipate when it will be in the best position for your chosen subject.





The light just before a storm can be very dramatic

differently depending on the direction from which light falls on them.

When the sun is behind the camera, shining fully on the subject before you, detail is revealed in each crack and crevice of a building, landscape, or even a human face. The result can be pleasing, but is rarely dramatic.

When light falls on the subject from an angle of, say, 30°-45° things start to improve. Shadows form in crevices, texture is revealed and your picture appears to acquire more depth. Pick a camera position when the light is shining at something like 90° to the subject, and things become even more dramatic. Now, one side of the subject might be brightly lit, while the side facing the camera will fall into shadow. Subjects can be brightly lit against darker areas, which really makes them stand out.

Go all the way and shoot when the sun is shining straight towards the camera, and things change again. Light like this is effective across water, where the sun's sparkling reflections can form an integral part of the composition. Alternatively, look for subjects with soft edges – a person's hair or the coat of a sheep in a field, perhaps – and the sun will draw a halo of light around the subject's profile. Translucent subjects like leaves, flowers or the sails of boats, lit from behind, glow. More solid objects can be allowed to fall into darkness, producing striking silhouettes against the sun or a dramatic sky.

Summer versus winter

In many ways, winter provides better light for outdoor photography than summer. Although the sun doesn't shine as much, when it does shine, it appears much lower in the sky all day long. Given that, all the photogenic qualities of low light – its softness, colour and direction – apply

◀ Lens hood

A good, deep lens hood helps to eliminate, or at least significantly reduce, flare when there is a risk of low, strong directional light hitting the lens and potentially spoiling your shots.

◀ Rain cover

When you're shooting the dramatic light just before a storm it's easy to get caught out. Be prepared by carrying a rain cover to protect your gear. It's also a good idea to pack a waterproof jacket for yourself as well.

10 tips for seeing the light

1 Shoot during the golden hours in the early morning or late afternoon.

2 Use frontal lighting to reveal strong detail in a subject.

3 When shooting in overcast light, use your preferred image-processing software to boost the contrast a little.

4 Make the most of sidelighting to reveal texture and give a more three-dimensional interpretation.

5 Try backlighting for more drama, creating clear silhouettes against brightly lit backgrounds.

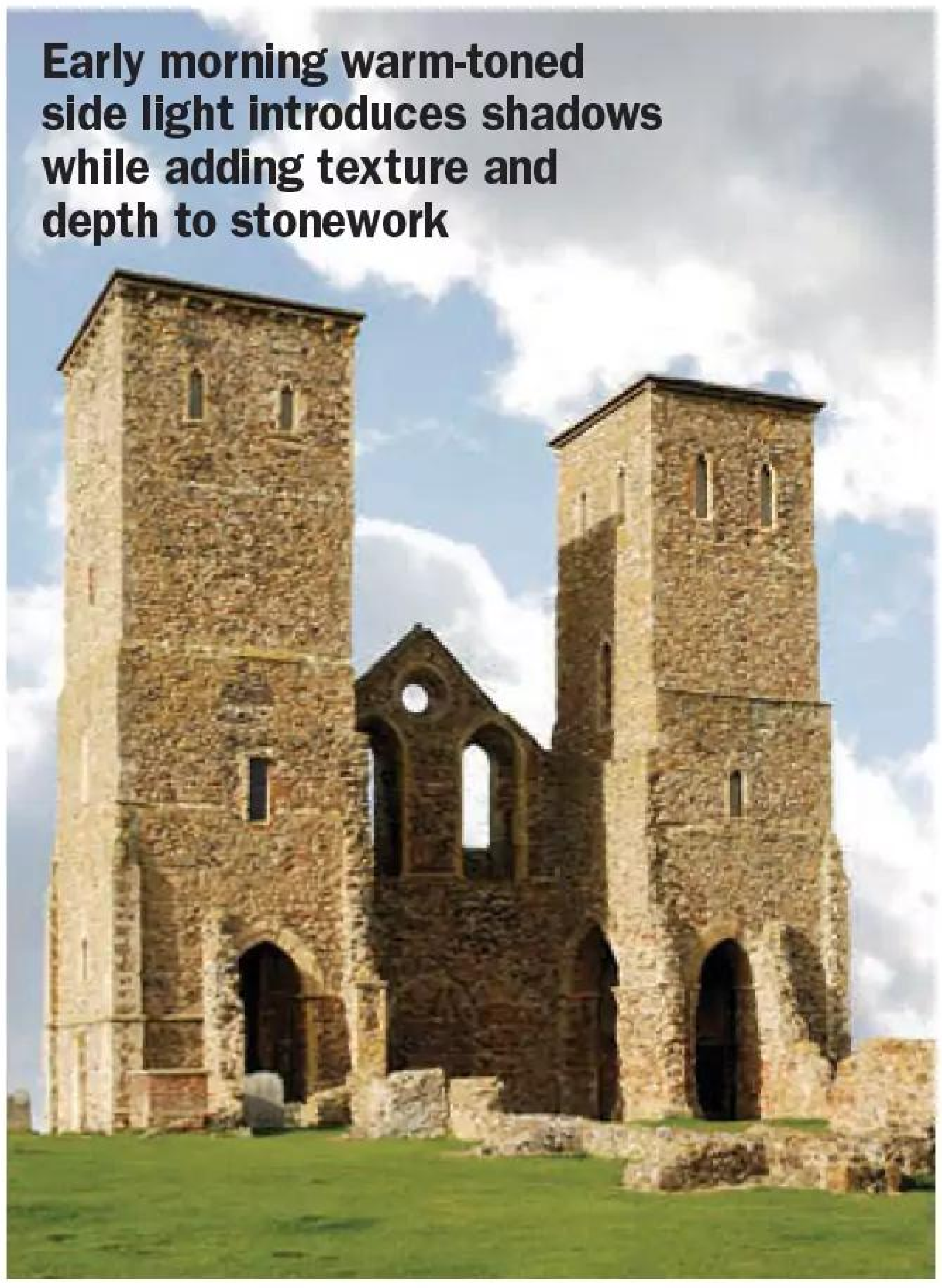
6 Use strong shadows created by backlighting as part of the composition. You can even make shadows the subject.

7 When shooting against the light, never look directly into the sun, even when wearing sunglasses.

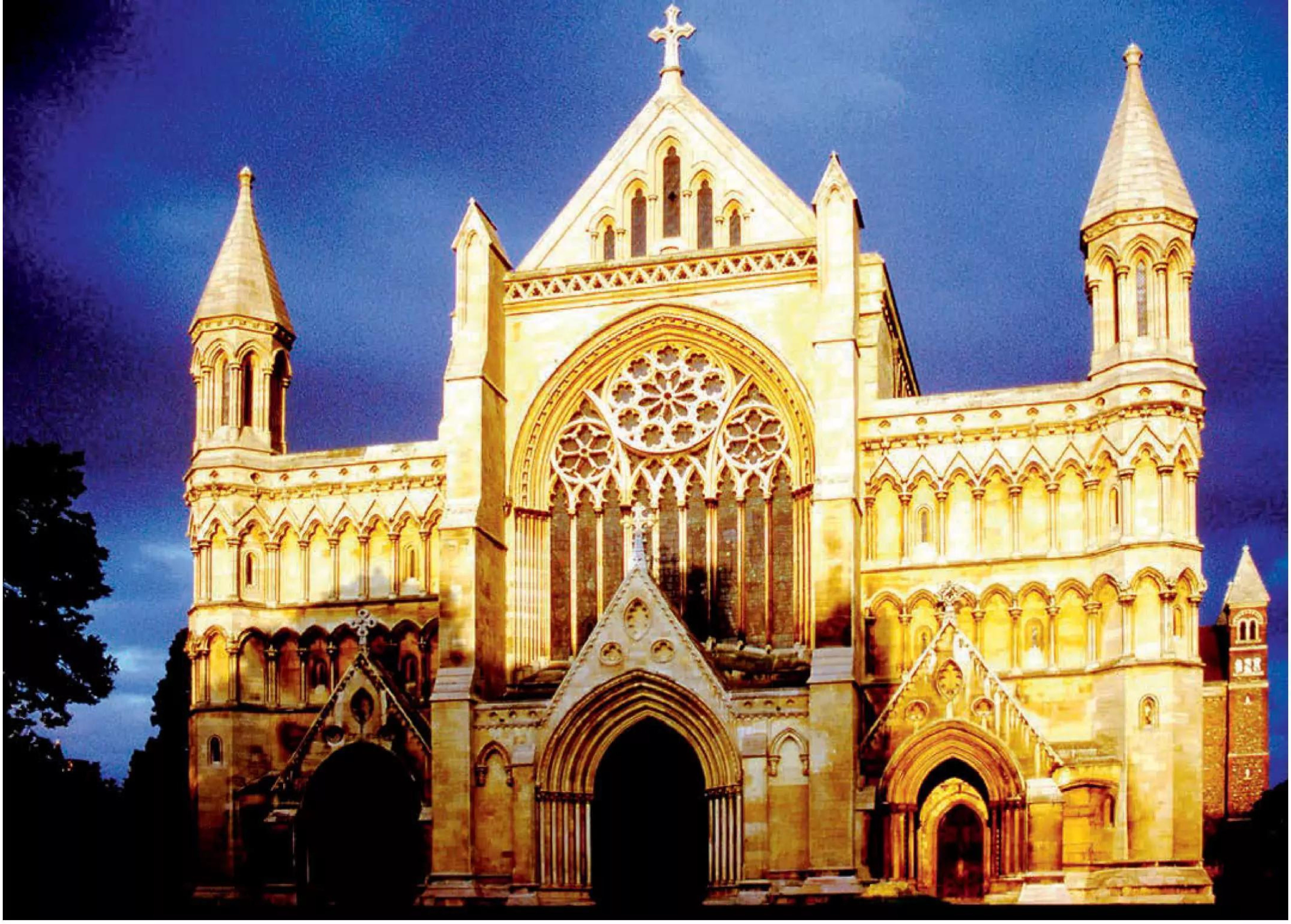
8 Avoid direct sunlight falling on the lens and creating flare. Use a lens hood.

9 If there are strong differences between the well-lit and shadow areas of a picture, use your camera's spot-metering mode to expose for the most important area of the frame.

10 If you include the sun in your picture, your camera's meter might be fooled into thinking the overall scene is brighter than it really is. Use plus one or two exposure compensation to open up one or two stops and rebalance the tones.



Early morning warm-toned side light introduces shadows while adding texture and depth to stonework



'The sun shone through a gap in the clouds and illuminated the cathedral with golden light'

throughout the albeit shorter daylight hours, and become even more dramatic during the golden hours.

Overcast light

The light under which you shoot doesn't have to be dominated by the sun. When the sky is overcast or even slightly raining, the light is less contrasty than sunlight. It is still directional, but much more subtly so and diffused in a way that illuminates everything evenly. Shooting in this kind of light can be an asset with certain subjects. Take a metal sculpture, for example. Shoot it in strong sunlight and you could end up with a hotch-potch of light and shade and shadows. But shoot the same subject in overcast weather and every nuance of the sculpture's surface will be evenly revealed.

Storm light

There is a very special light that is specific to the time just before or after a storm, when light-coloured subjects seem to take on a brilliance of tone against their more sombre surroundings, even when there is no sun in the sky. If the sun does briefly appear, and it's behind you with dark skies in front, the scene before you will be brilliantly lit against a dramatically dark sky. If it begins to rain, water droplets in the air refract white light and break it back down into its component colours of the spectrum – which is where rainbows come from.

Sunset and beyond

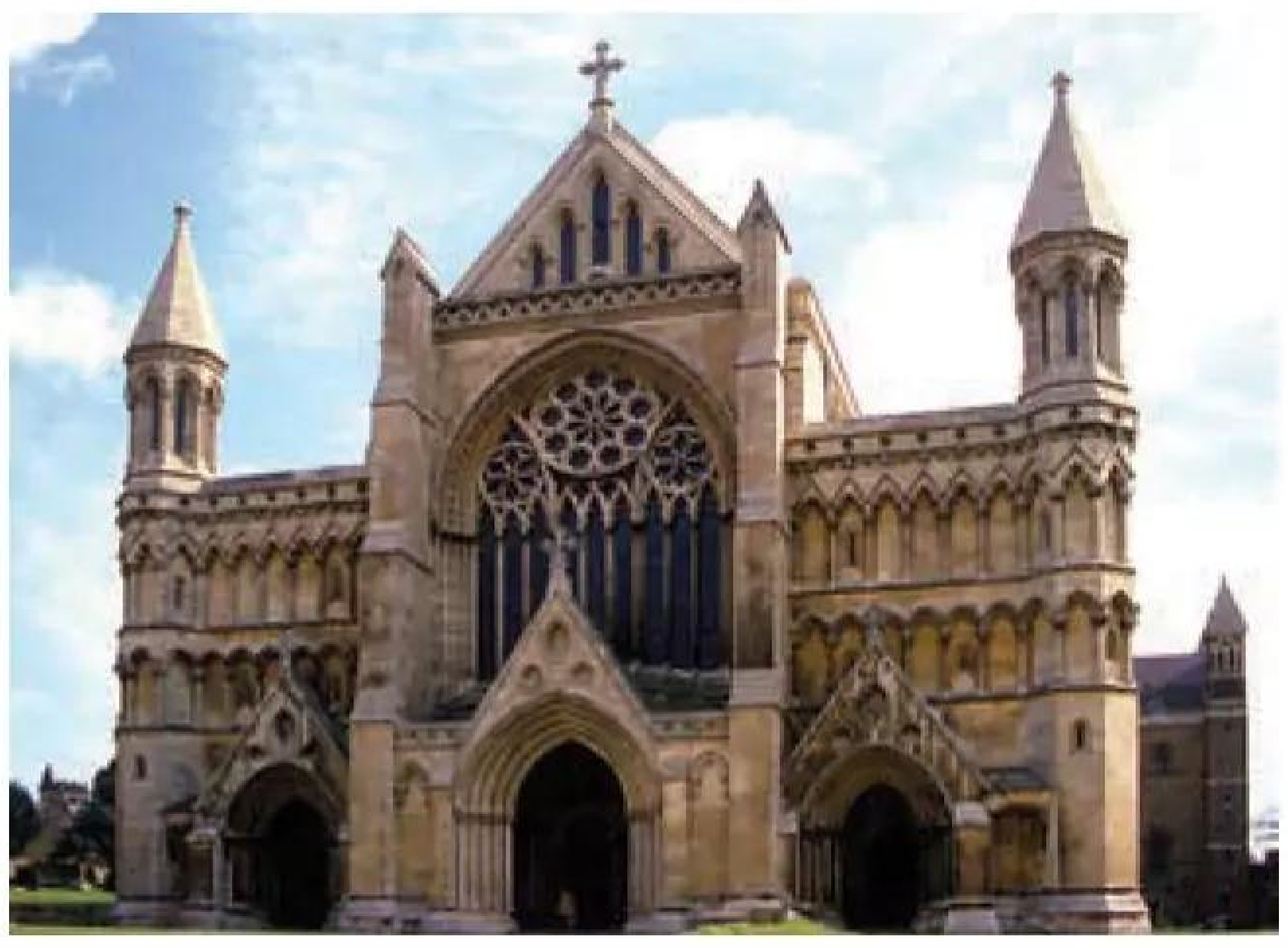
Sunsets are irresistible for most photographers, but shooting the actual sun as it sinks towards the horizon is not your only option. At such times, turn around to see how the low, red sun is illuminating the scene behind you. The effect is particularly attractive on stone buildings.

On a clear night, when there are no clouds along the horizon, in the few minutes after the sun has vanished you might see an afterglow as the sky takes on red, then orange hues along the horizon, fading to purple and blue higher in the sky. It's something that is worth shooting for its own sake, but within minutes it's gone and you are into the blue hours. This light works well over water, reflecting the darkening sky, especially if there are light-coloured boats dotted on the water to pick up and reflect back what's left of the fading light.

And then night falls. It's time for some night photography and a whole new way of looking at the light. AP

Lucky shot

ST ALBANS Cathedral is an impressive building. But shot around midday, with the sun obliquely behind it (see below) didn't do justice to its grandeur. My estimation was that early evening, about an hour before sunset, would be better. By the time I returned, the sky was heavily overcast. But then came a break in the clouds behind and at an angle to where I was standing. The sun, not yet low enough to be red but just passing through the orange/yellow stage of the spectrum, shone through the gap and illuminated the cathedral with golden light against the dark sky. The effect only lasted a few minutes. Sometimes it's not just about being able to anticipate the light, it's also about being in the right place at the right time.



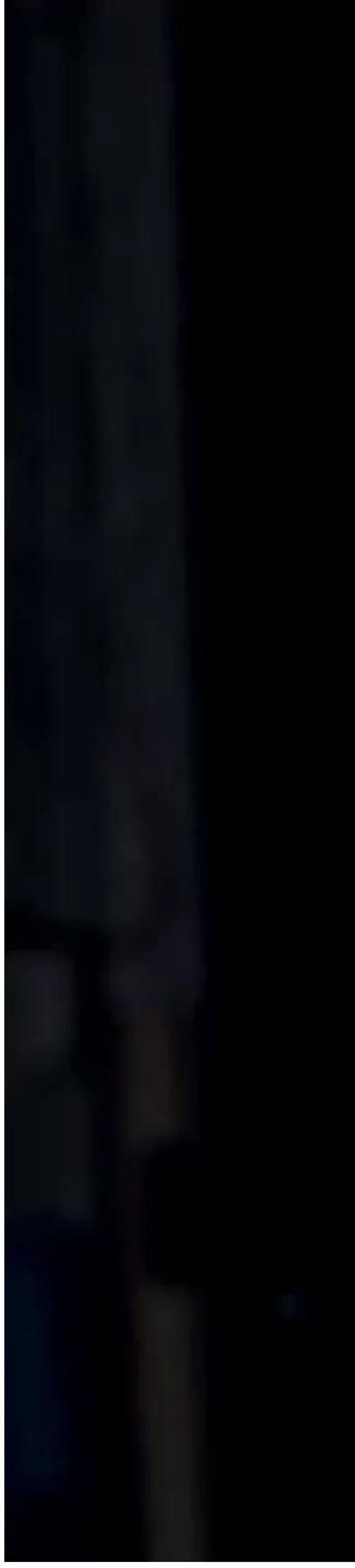
Shooting the cathedral during the middle of the day didn't do justice to its grandeur

A clear night produces a few mintues of afterglow once the sun has set

Ultimate guide to flash

Flash photography is a lot more accessible thanks to Speedlite flashes with TTL auto exposure, says **Ian Pack**

ALL PICTURES © IAN PACK



KIT LIST

Pixapro Li-Ion580 MkII Speedlite
This compact hot shoe flash can be used on and off camera with a wireless trigger. It has TTL auto exposure linked to your camera exposure meter, manual setting for ultimate control and a multi-flash function for creating stroboscopic images.

Rogue FlashBender 3 Large Reflector
These reflectors fold flat so slip easily into a camera bag. With the addition of a diffusion panel you have a small soft box. Smaller soft boxes are ideal when working outdoors in windy conditions as they have a smaller surface area than umbrellas.

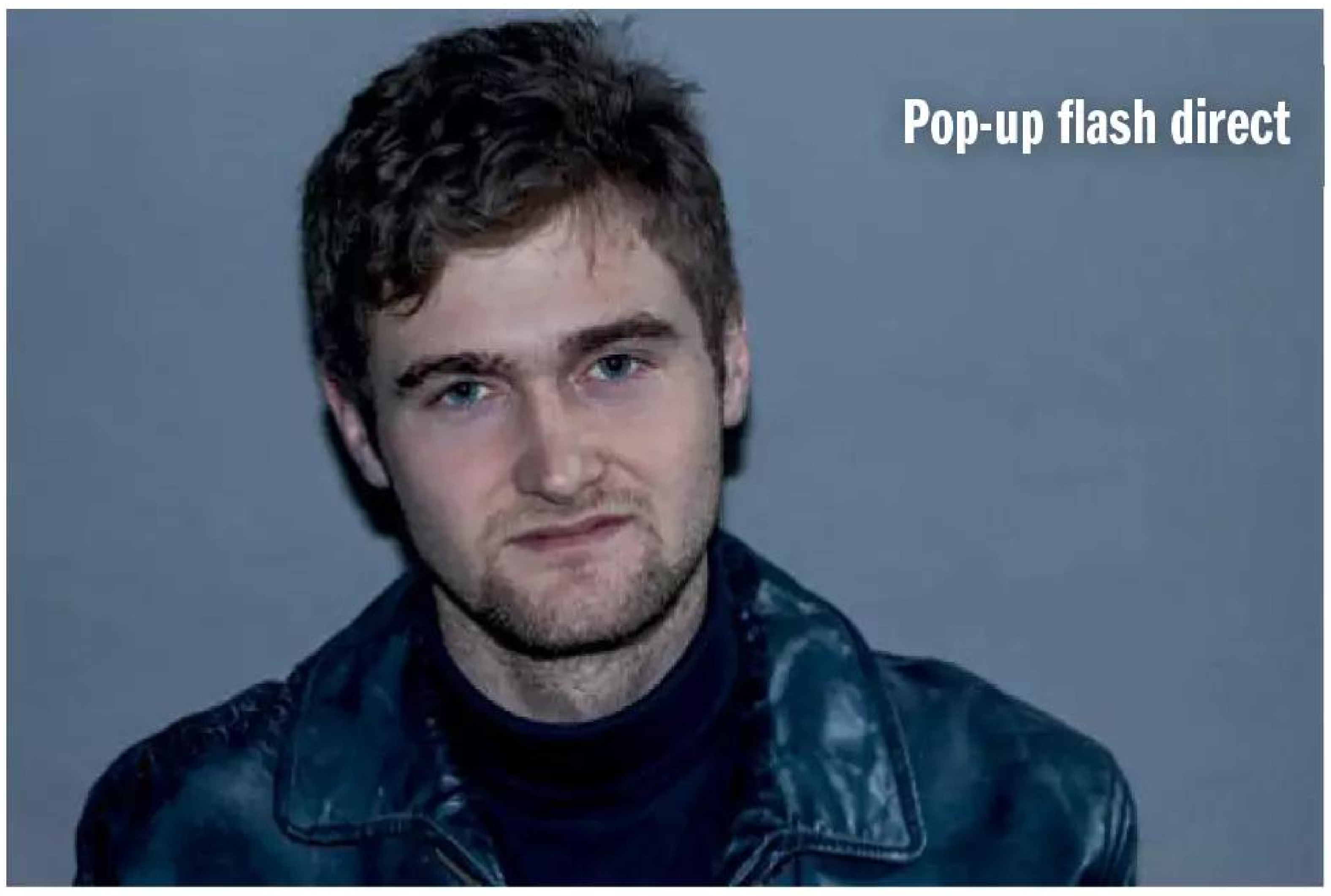
Nam Grip LS-255C Carbon Fibre Light Stand
Weighing 500g this stand is ideal for mounting your Speedlite. It extends to 220cm and closes to 48cm. Where weight and bulk are an issue, it's possible to carry a single Speedlite kit weighing around 1,500g.

White Translucent Shoot-Through Umbrella
One of the first light modifiers for anyone who works with Speedlites or other flashes. Available in sizes from 80cm to 200cm. Some fold down small enough to fit inside a camera bag, making them ideal for photographers on the move.

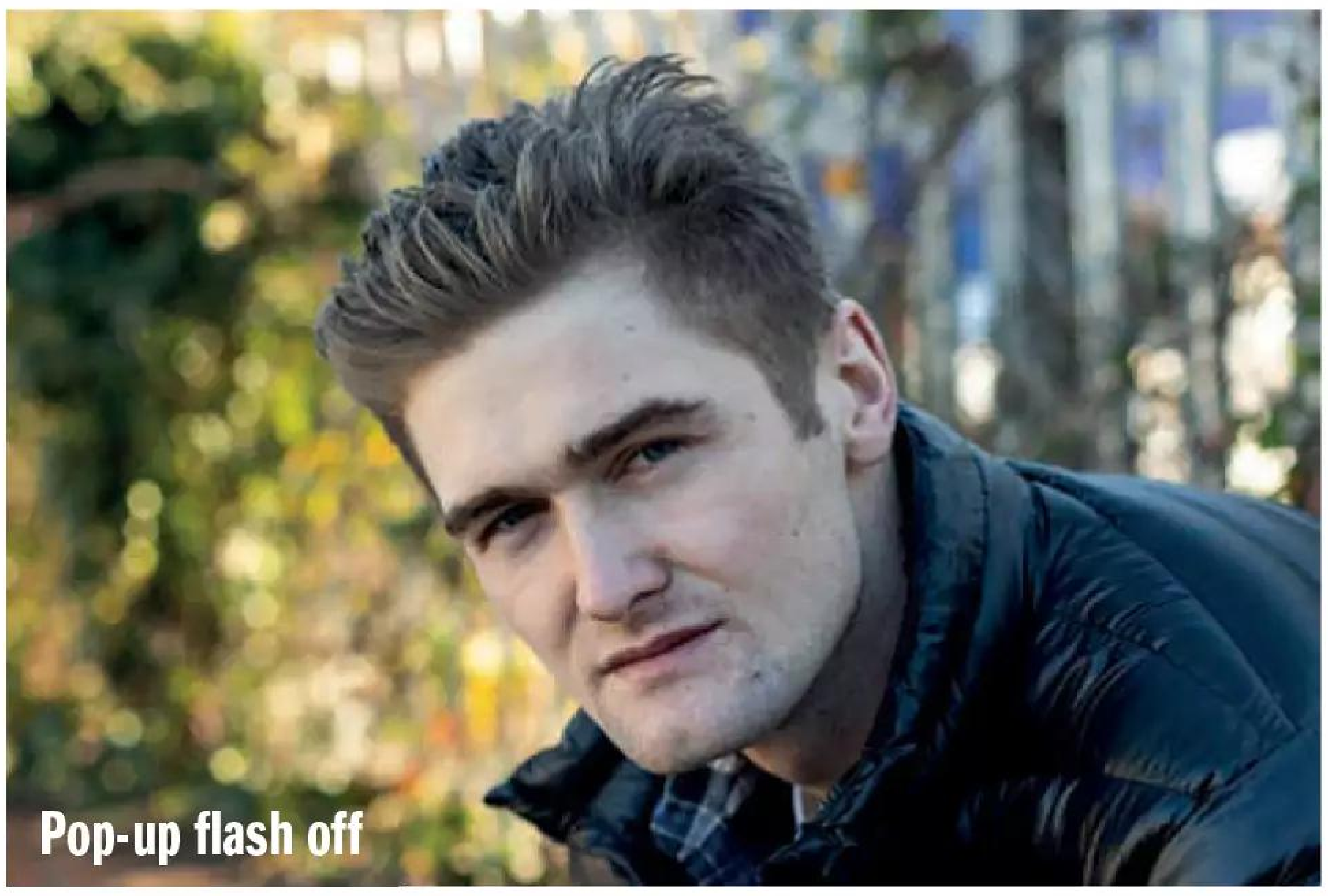
Pop-up flash

Many crop-sensor DSLR and mirrorless cameras have a pop-up flash on top of the camera. This is either not used by some or little by others. Used with care it can be used outdoors to fill-in shadows and create catchlights in the eyes of the subject. Pop-up flash is a small, hard and direct light source which doesn't create flattering light, but there are several diffusers available which profess to soften the light from a pop-up flash. They are still a relatively small light source close to the flash which doesn't provide optimum diffusion.

Pop-up flash can also be used to control off-camera flashes, but is limited to short range line of sight. Dedicated flashes and wireless triggers will give better results.

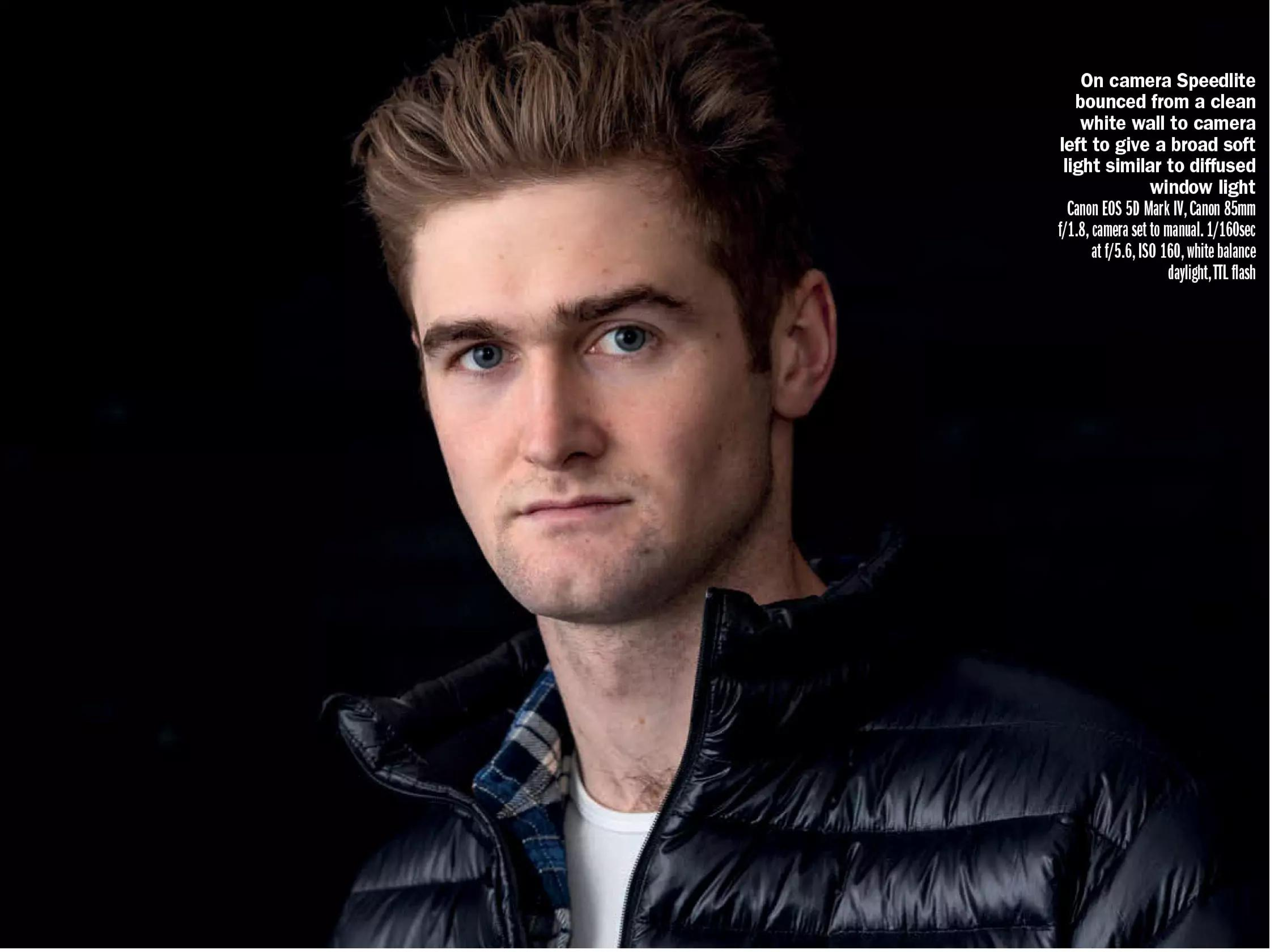


Pop-up flash direct

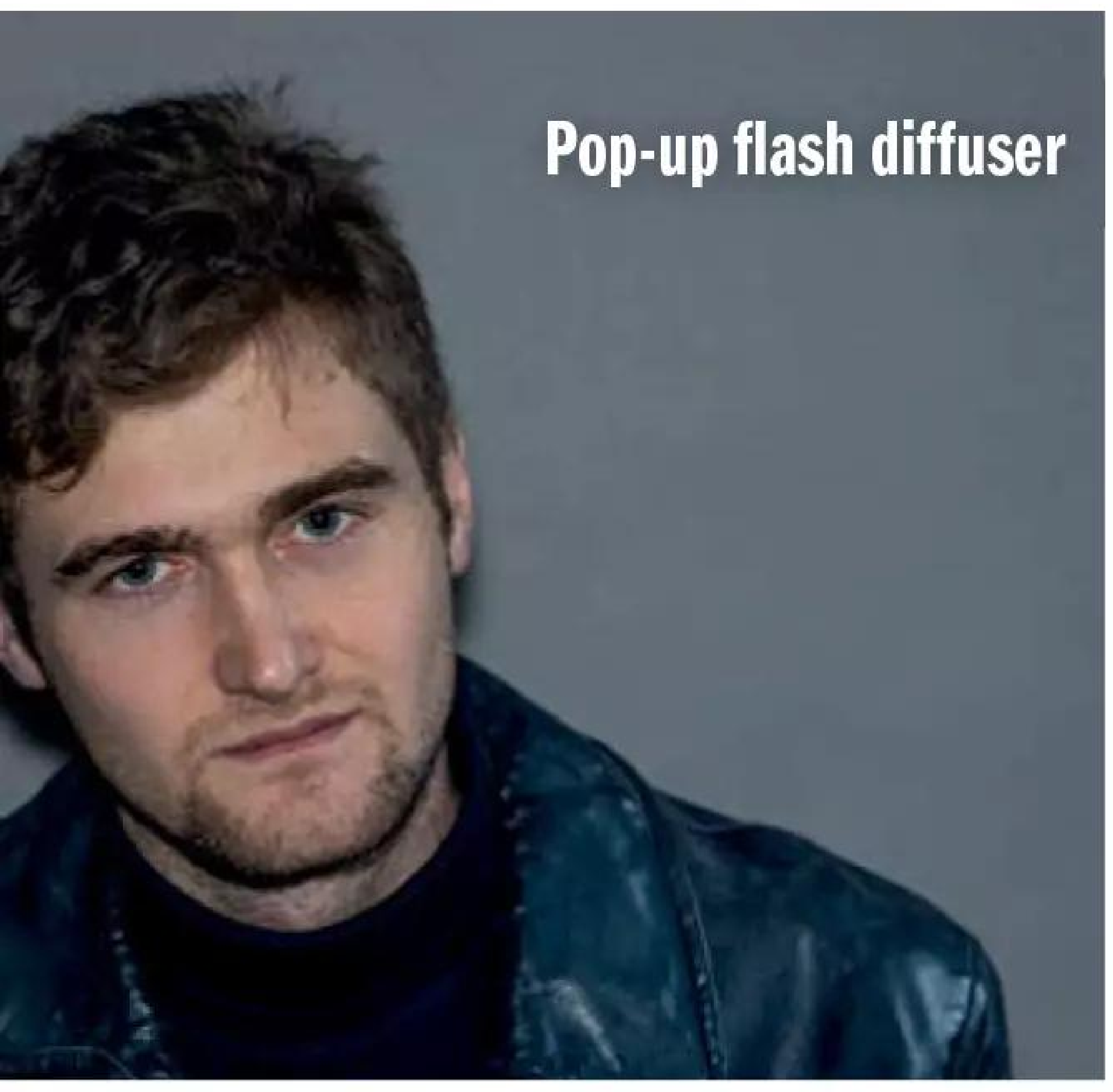


Pop-up flash off

Pop-up flash on



On camera Speedlite bounced from a clean white wall to camera left to give a broad soft light similar to diffused window light
Canon EOS 5D Mark IV, Canon 85mm f/1.8, camera set to manual. 1/160sec at f/5.6, ISO 160, white balance daylight, TTL flash

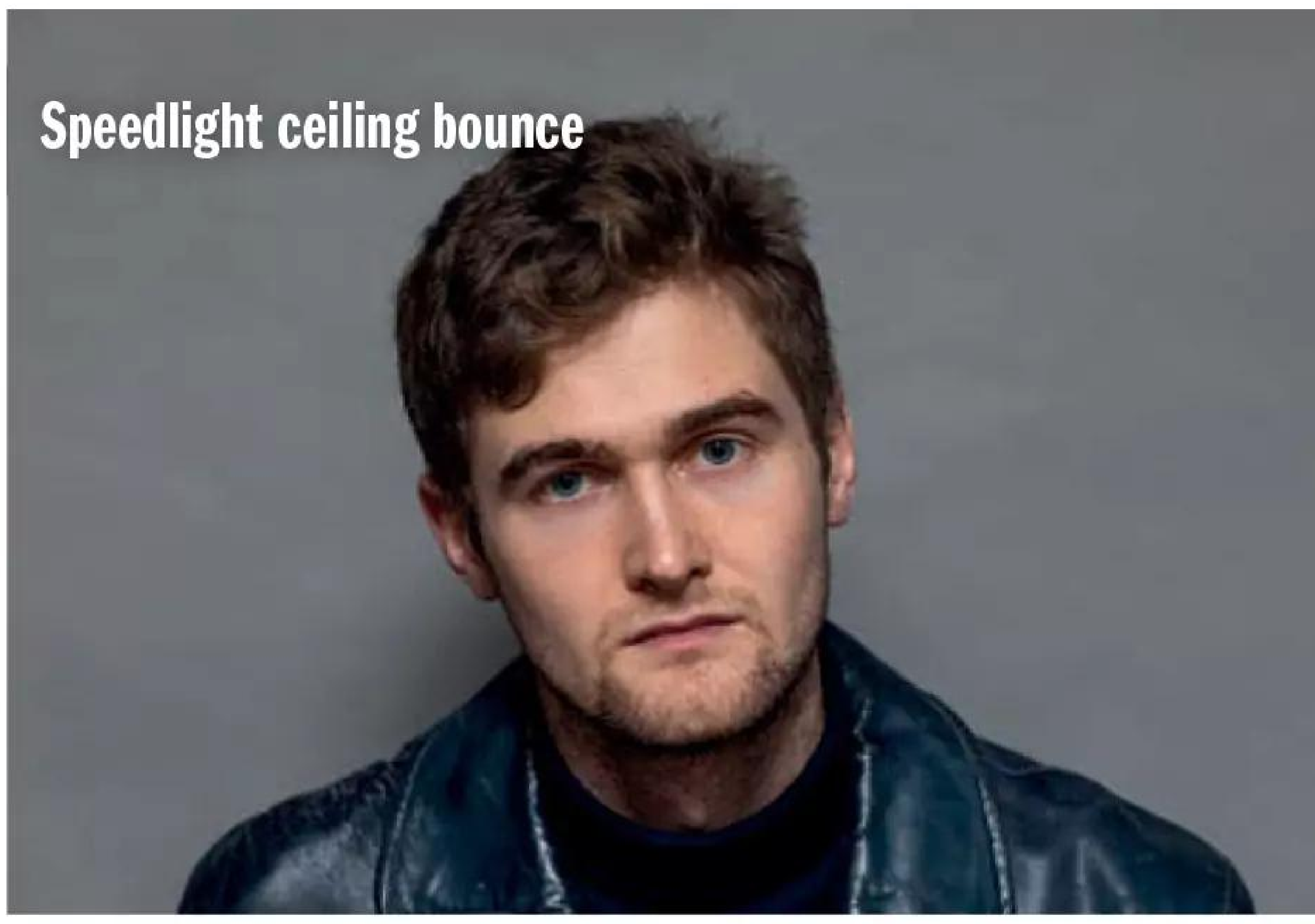


Pop-up flash diffuser

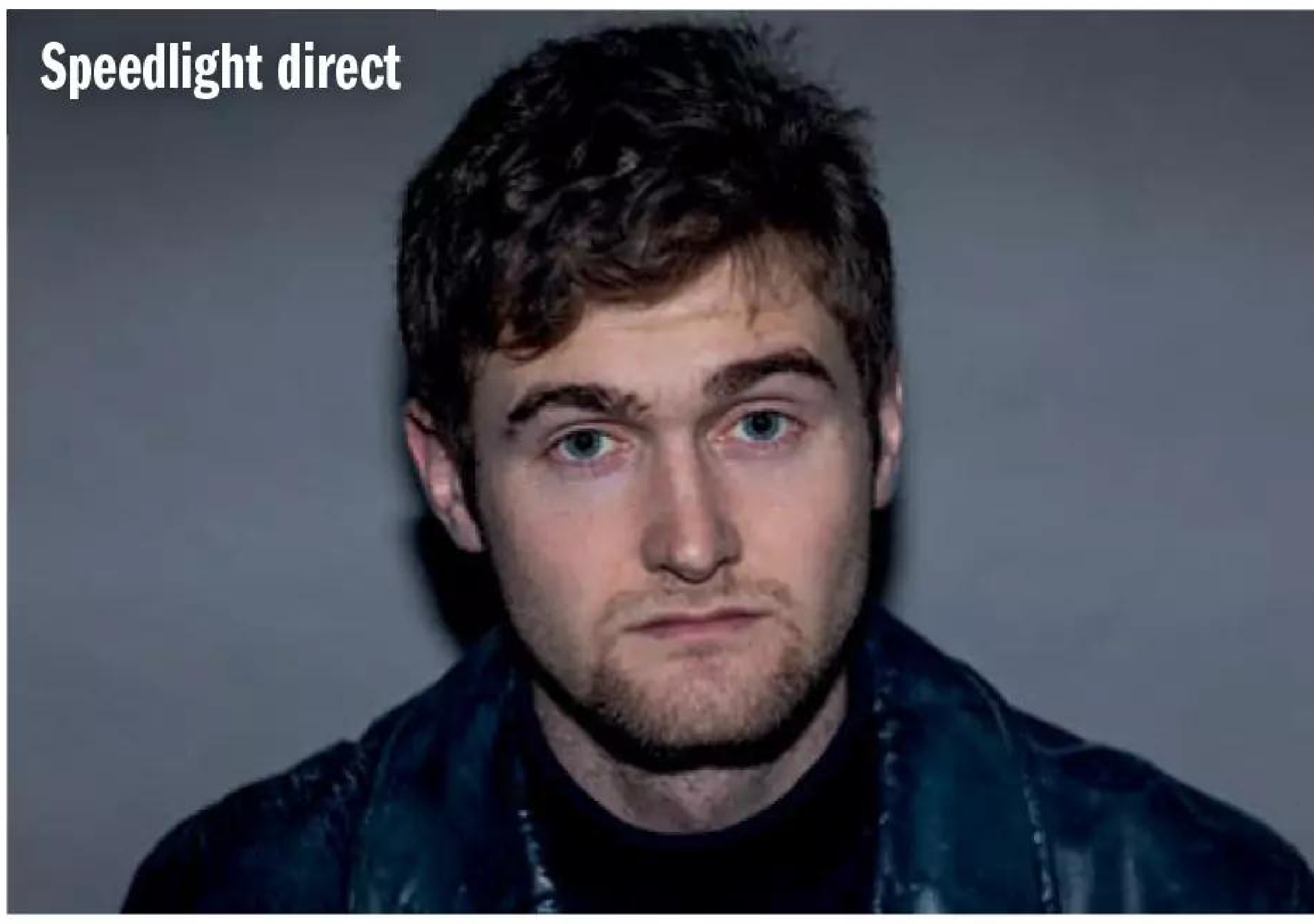
Hot shoe flash or Speedlites

Many photographers own a hot shoe flash or Speedlite and mainly use it as a convenient way to illuminate a photo. There's so much more to Speedlites. When fitted to the camera hot shoe there will be the facility for TTL auto exposure which can be adjusted independently of the camera with the exposure compensation facility. Most Speedlites have a flash head that swivels allowing you to bounce the light from nearby ceilings or walls, which create a large flattering soft light. Do remember that any bounce surface that is not white will create an overall colour cast in your photos.

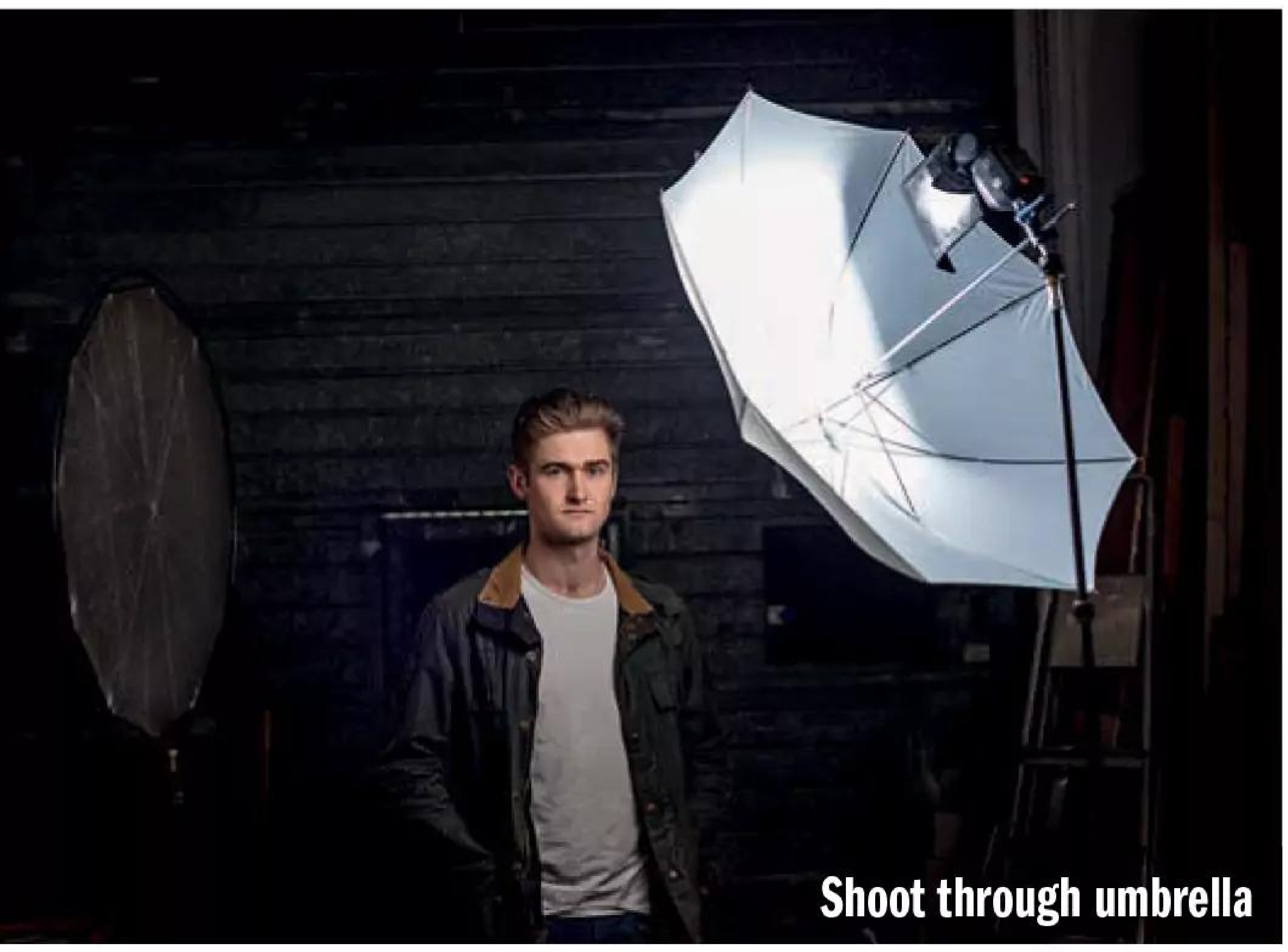
There are many light modifiers for Speedlites ranging from £10 to hundreds. One of the least expensive is the white translucent, shoot-through umbrella which diffuses the light from a Speedlite and is ideal for lighting solo portraits or small groups. Don't be put off by the low power of Speedlites which average 50-60Ws (Watt seconds). Used with mid-range ISO settings and an aperture of f/4 or f/5.6, a Speedlite is a versatile tool.



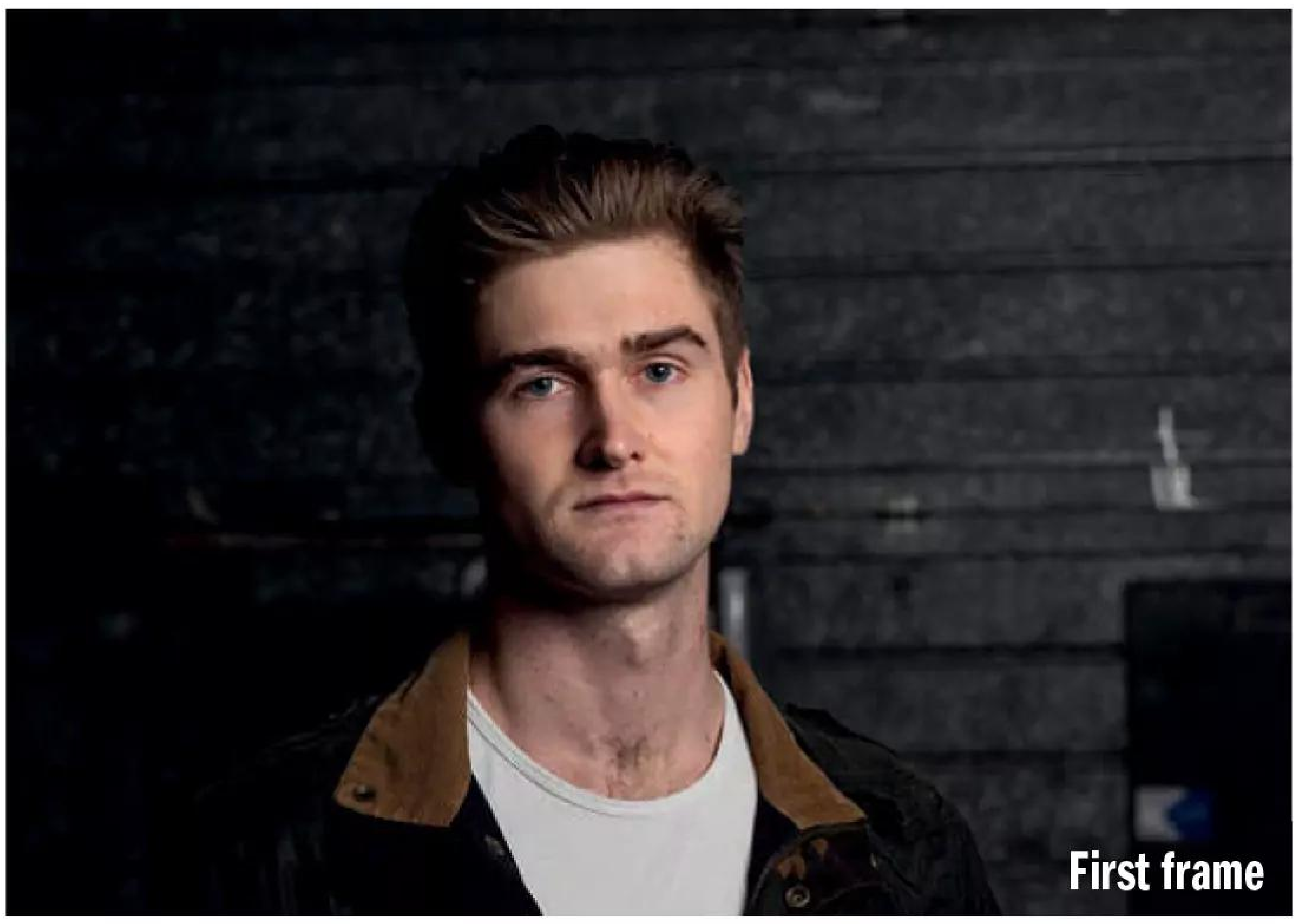
Speedlight ceiling bounce



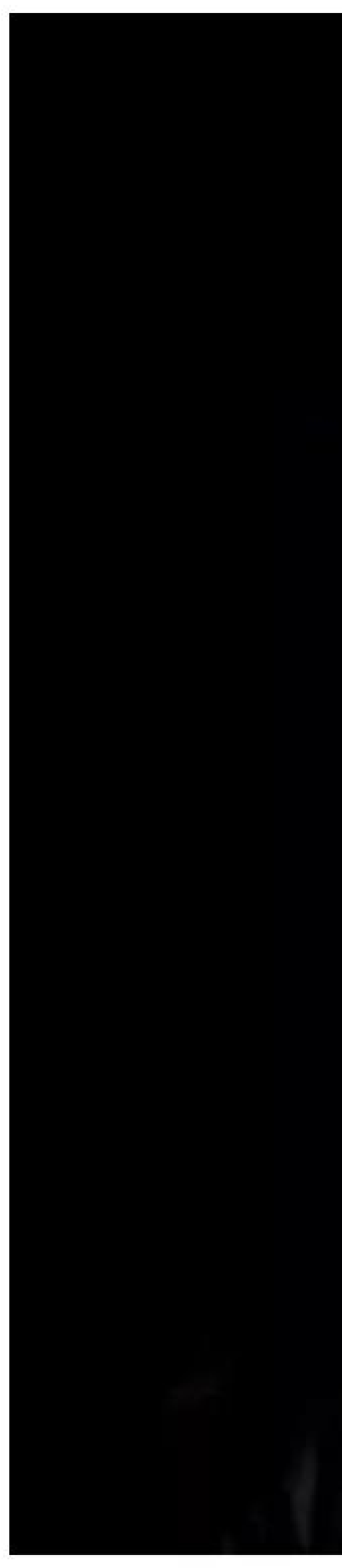
Speedlight direct



Shoot through umbrella



First frame



Indoors simple solo portrait set-up

All you need to start creating beautiful portraits are a Speedlite, wireless trigger, a white shoot-through umbrella, an umbrella swivel, a light stand and a reflector to bounce light into shadows.

This is my go-to headshot set-up. Using the following settings as a starting point you can create portraits or head shots within mere minutes.

With your camera set to manual, set the shutter speed around 1/125sec to 1/250sec depending on your camera's flash sync speed. ISO 320, aperture f/5.6, daylight white balance. For flattering results without much distortion use a short telephone lens or a zoom setting from 70-85mm.

The Speedlite should be set to manual with the power at 1/16th. This is normally done with the wireless trigger. The spread of the beam from the Speedlite can be changed using the zoom setting. This does not affect the hardness of the light, just the coverage. 50mm is a good starting point when photographing with a shoot-through umbrella.

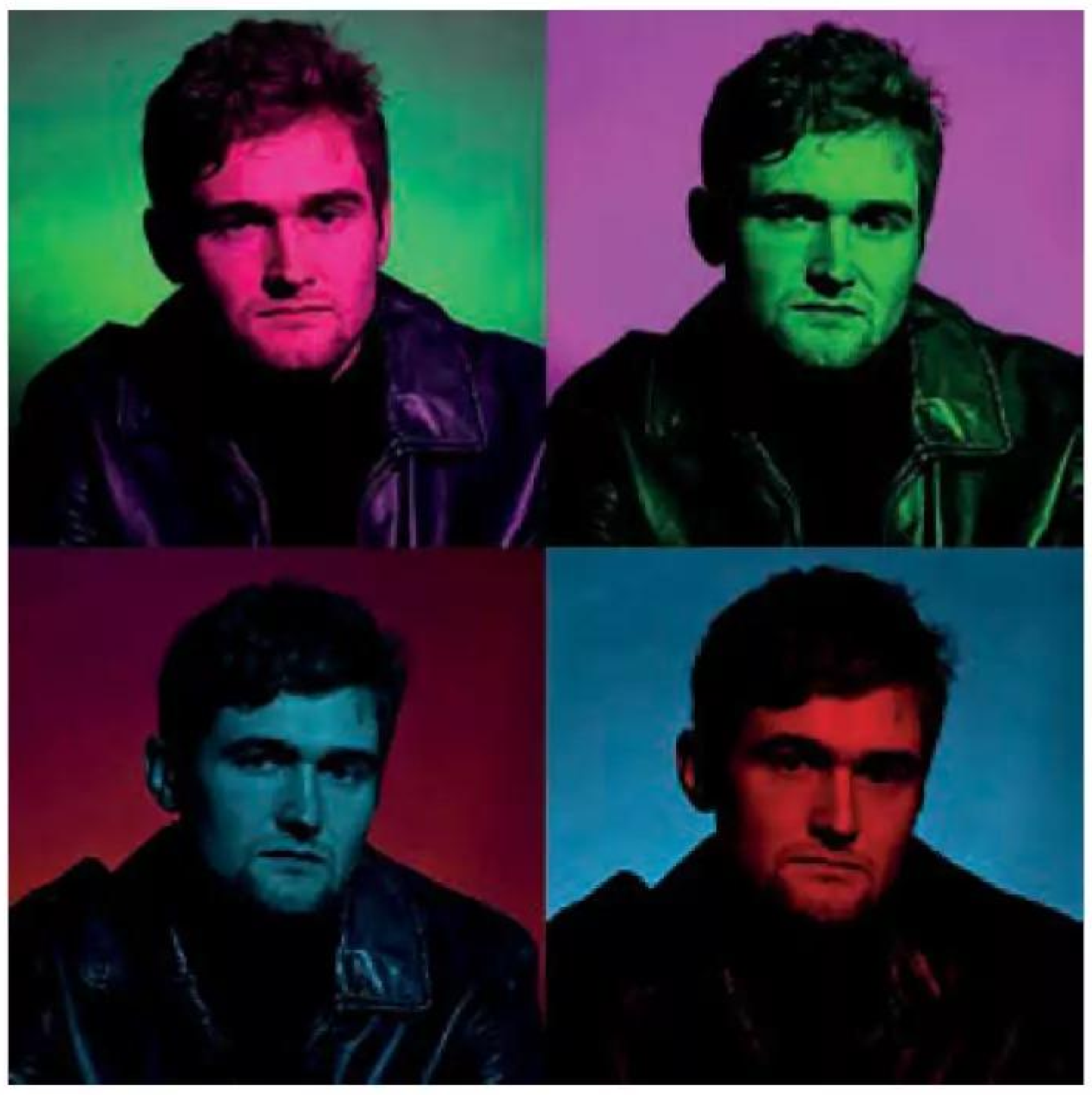
Once the Speedlite, umbrella and light stand are assembled, set the umbrella slightly above head height to one side of the subject, pointing the umbrella shaft at the subject's nose.

Turn the umbrella slightly toward the camera – this is known as feathering. Take a test frame to judge the exposure, lighting and pose. Adjust as necessary using the camera histogram to judge the exposure.

In the first frame with the shoot-through umbrella the background is lighter and busier than expected. I moved the Speedlite closer to my model, Max, and flagged one side of the flash to reduce the light falling on the background. The photos you see here are straight out of camera with basic raw processing.

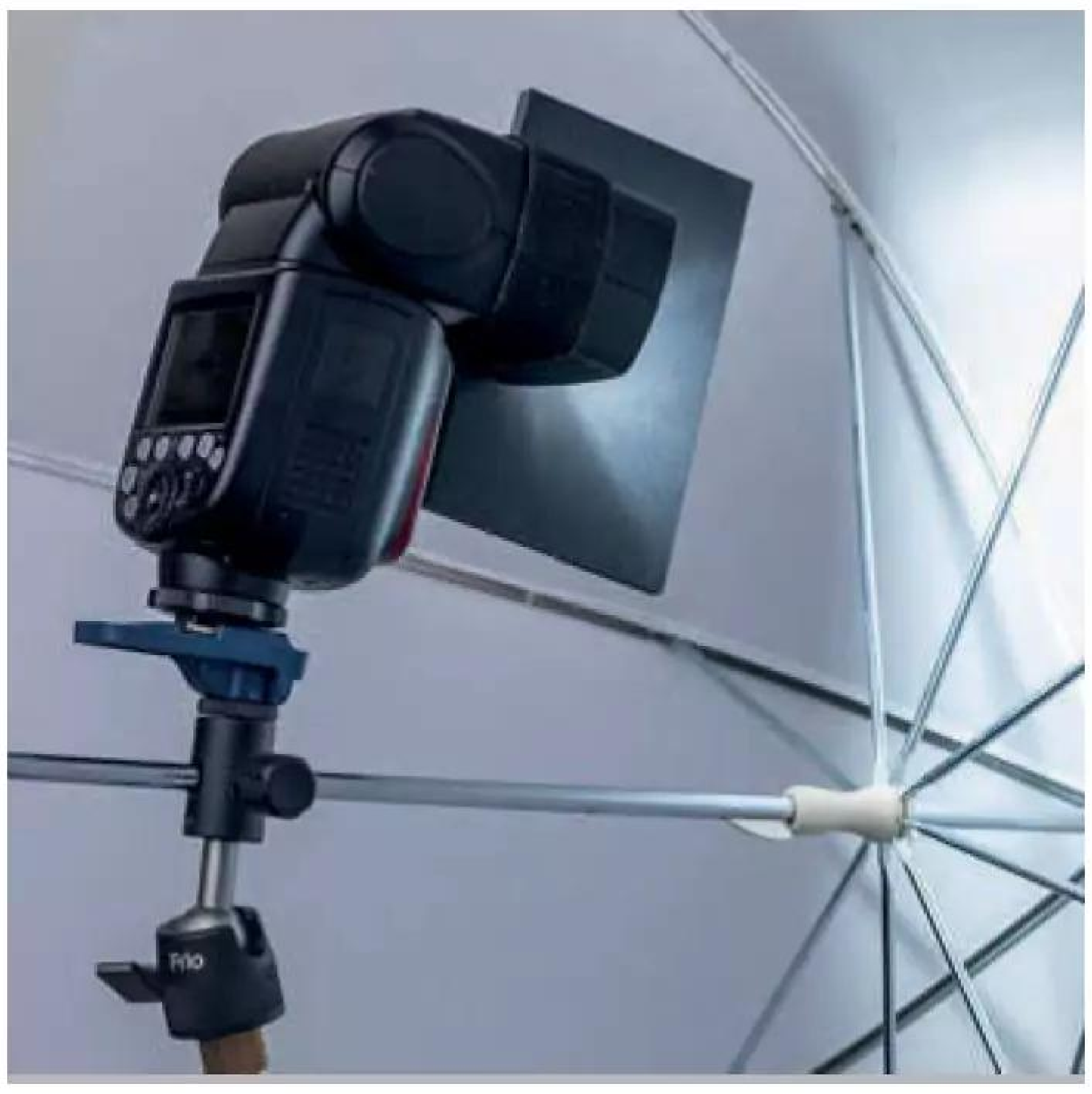
In the final frame I've added a soft gold reflector to open the shadows or give them more detail as they were too dense for my liking. The reflector has also warmed the skin tone on the shadow side of Max's face.

IAN'S TOP TIPS



Creative coloured gels

Coloured gels are an inexpensive accessory and great fun to experiment with. They can be used to add colour to shadows, as an accent light for portraits, the key light for added interest or a background light.



Flag the light

Light from umbrellas can be controlled by attaching a black board or flag to the Speedlite head. I use foam core board held in place with a strip of hook and loop fastener.

Get in close

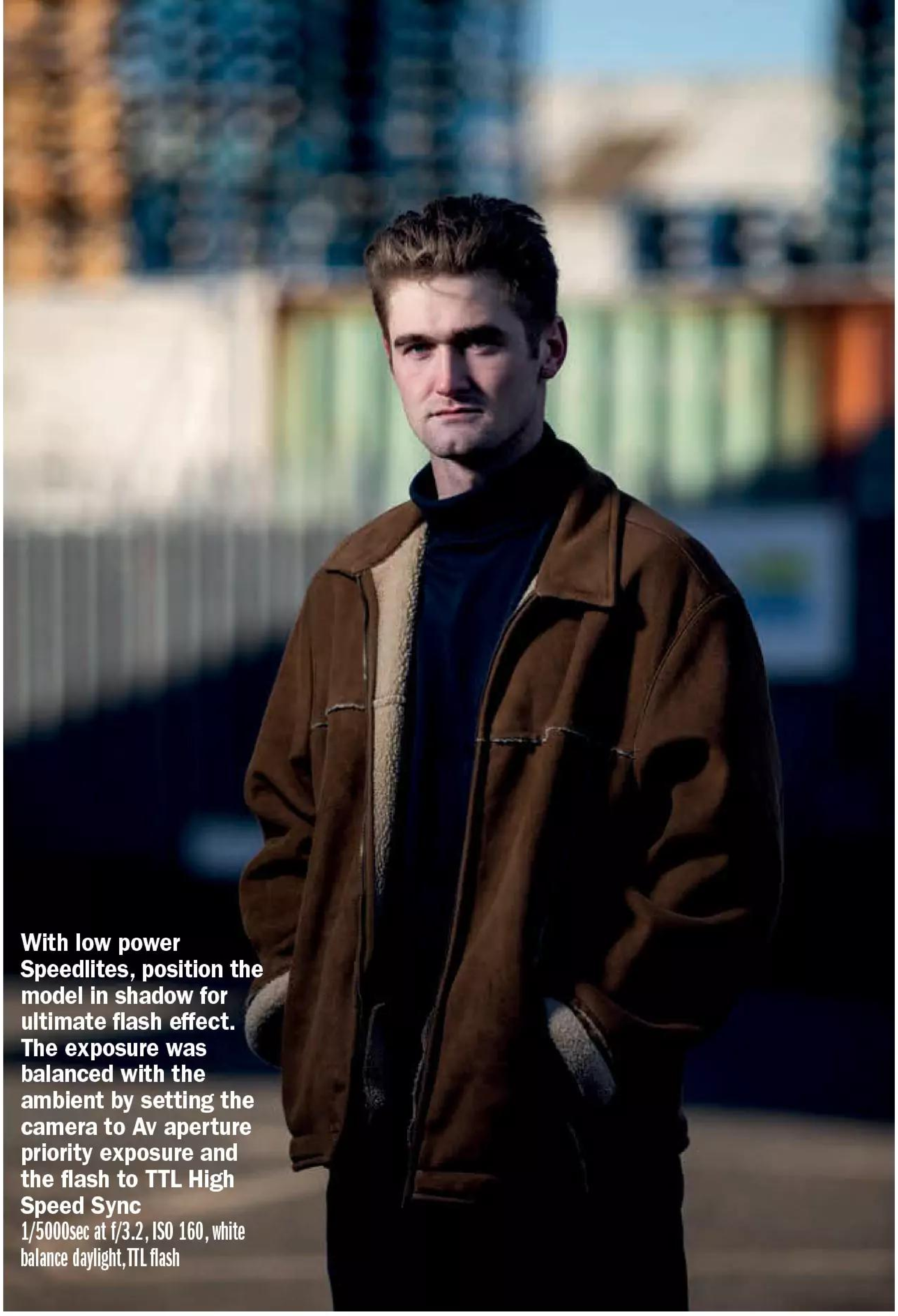
By moving the light closer to the subject the background becomes darker and the light more flattering when using light modifiers like soft boxes/umbrellas. The ideal distance for a light modifier from the model is equal to the longest dimension of the light modifier.

Final frame

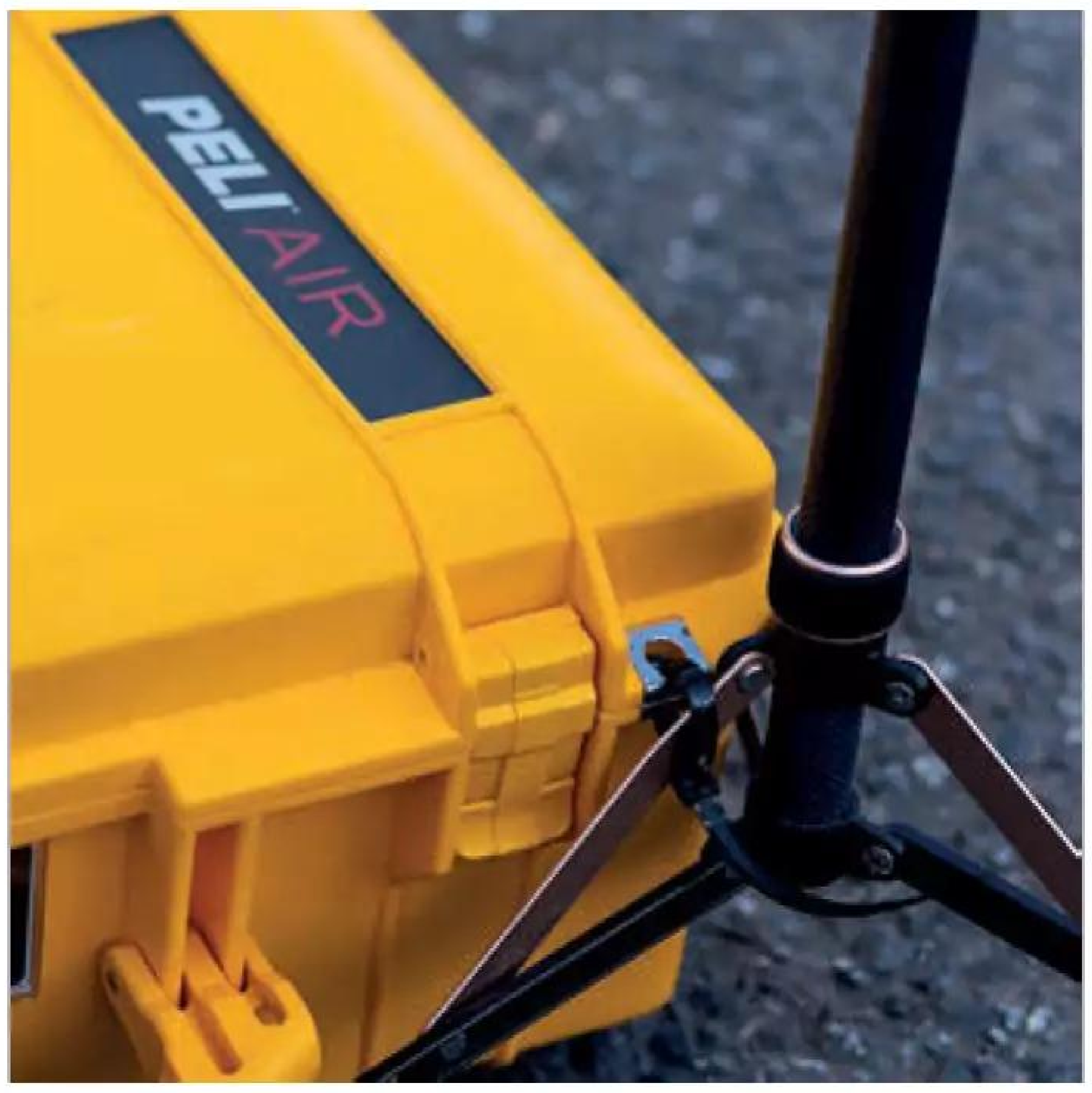
Outdoor portrait

It's also possible to create stunning outdoor portraits with a little thought and planning. Here I positioned Max in the shadow of a building to reduce the ambient light falling on him. The camera was set to Av, the Speedlite set to TTL and modified with a RogueFlashBender 3 Large Reflector with diffuser panel giving me a 25cm soft box. Using the small soft box meant that Max was lit only to his waist.

If you have a Speedlite, don't let it gather dust, take it out and use it. If you want to begin using off-camera flash, a Speedlite is a great introduction to flash photography, both indoors and outdoors.

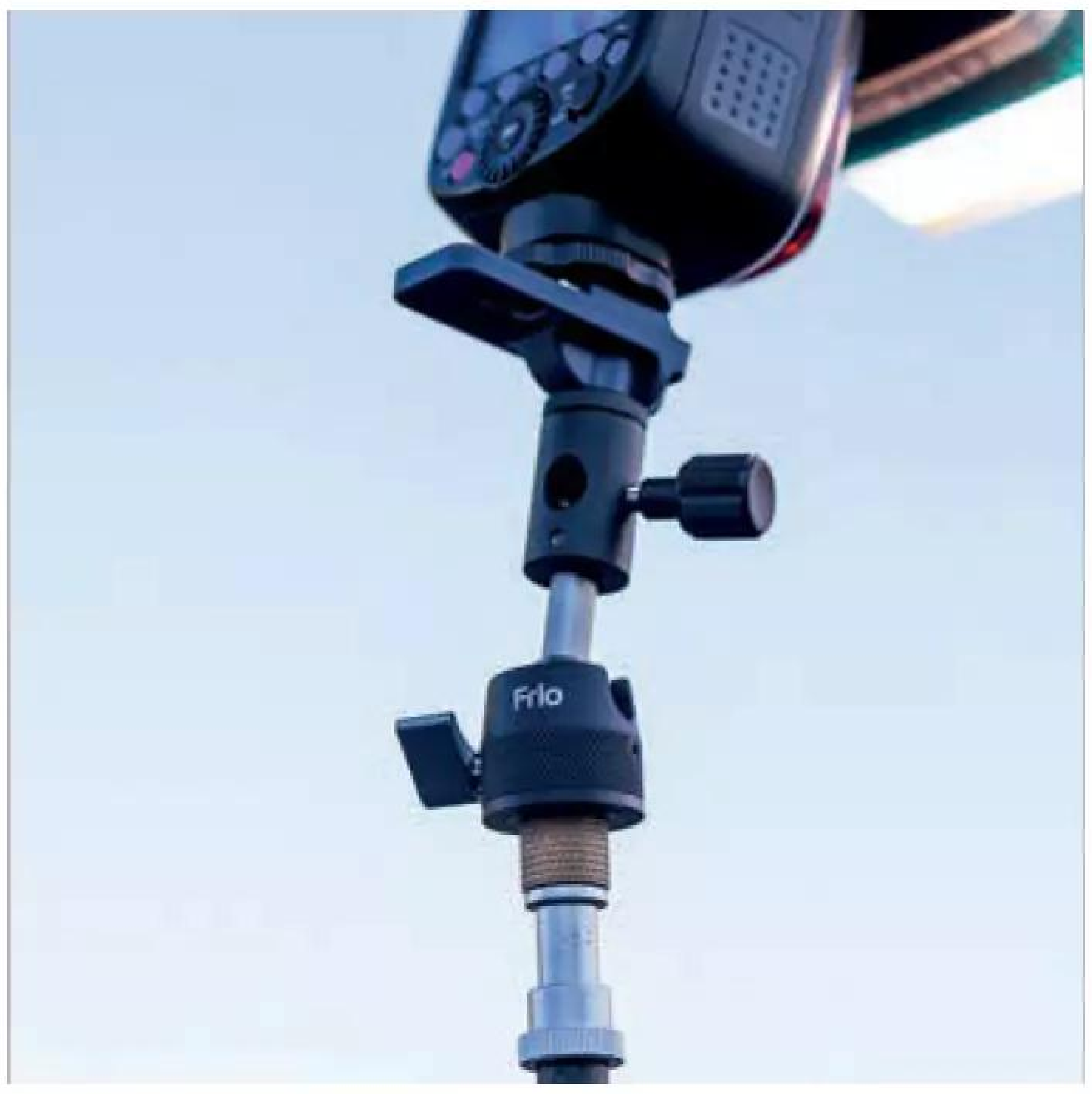


With low power Speedlites, position the model in shadow for ultimate flash effect. The exposure was balanced with the ambient by setting the camera to Av aperture priority exposure and the flash to TTL High Speed Sync
1/5000sec at f/3.2, ISO 160, white balance daylight, TTL flash



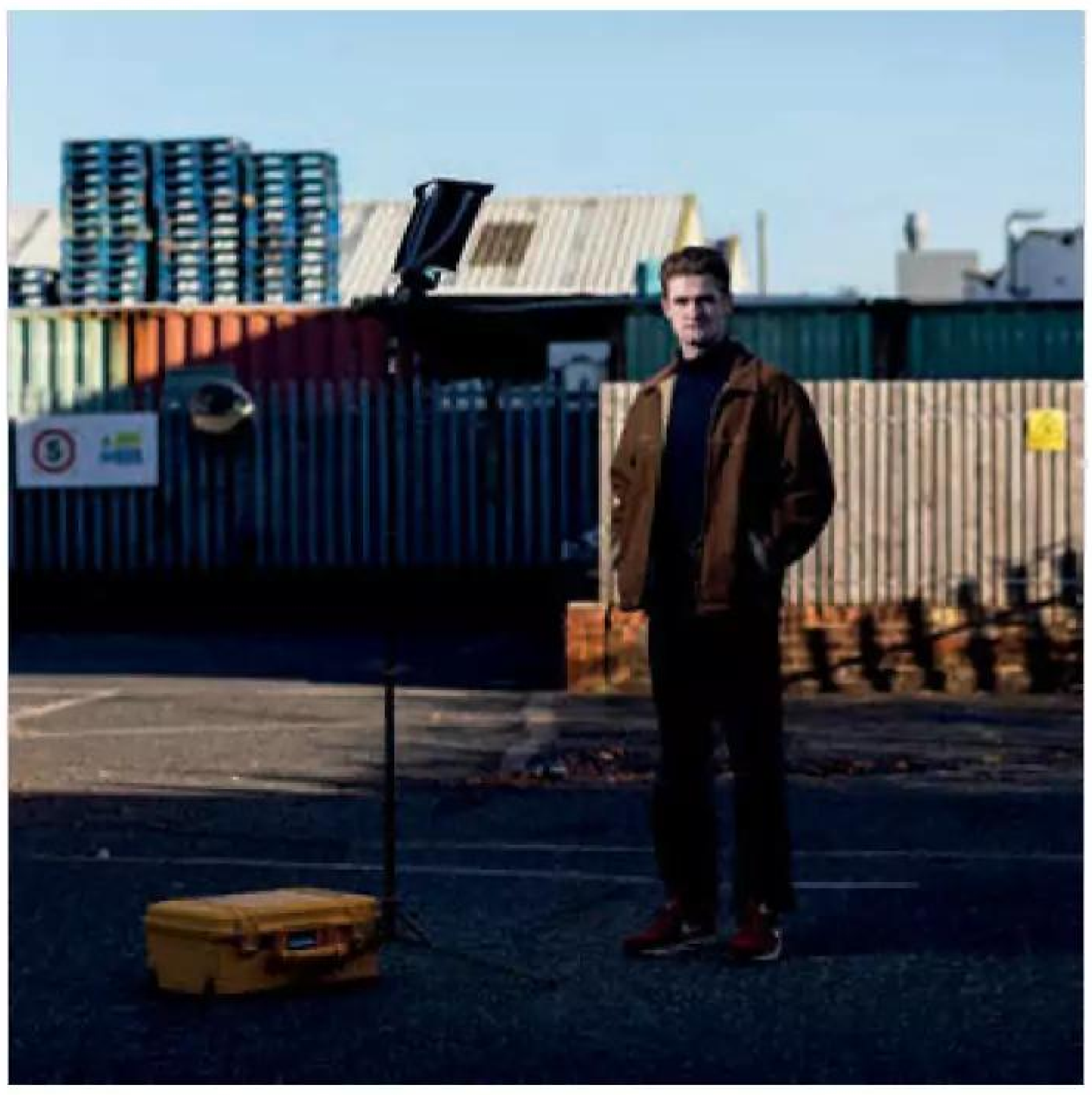
Stabilise the stand

It's good practice to ensure that your light stand is stable when you're working alone. You can put the light stand riser through the handle of your camera bag. When using a hard case I attach the case to the light stand with reusable cable ties.



Use an umbrella swivel

For any photographer who works with Speedlites off-camera, a means of mounting to a light stand is essential. Umbrella swivels are essential. Most only tilt, and some have a ball head which aids accurate positioning of the Speedlite.



Choice of background

With care, even unpromising locations can create usable backgrounds. The piles of pallets created the industrial dockside feel I wanted. I used a 200mm prime to isolate Max from the surrounding distractions and a wide aperture threw the background out of focus.

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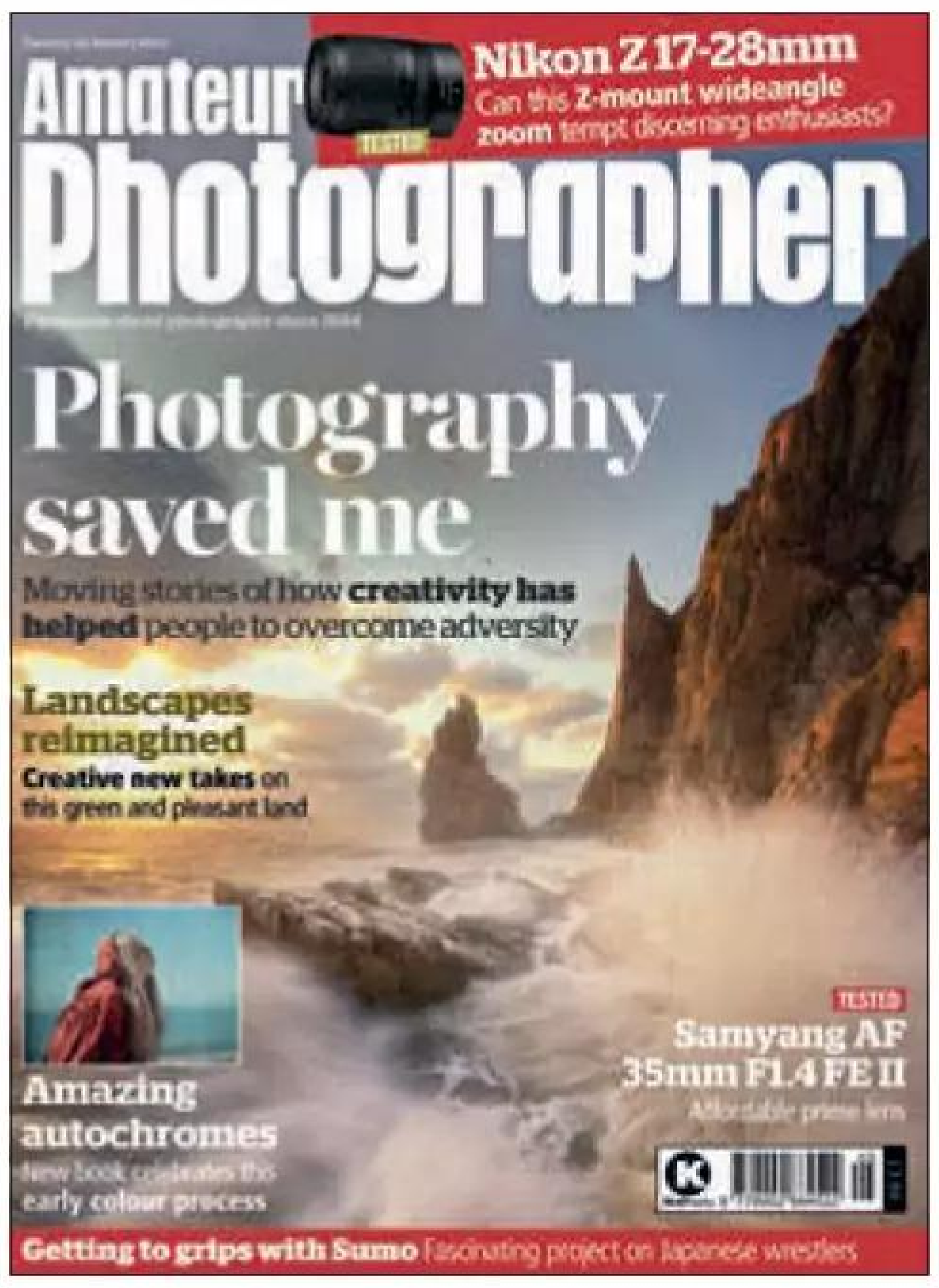
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Photographer Julia Trotti finds a 50mm prime lens ideal for outdoor portraits

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One lens to rule them all

The versatile 50mm is a lens that deserves a place in any kit bag

The benefits of limiting yourself to just one lens and getting to know it intimately are manifold. We asked three photographers why they still love 50mm

While it can be tempting to fill your camera bag with a host of zoom and prime lenses, the 50mm is still one of the most versatile pieces of glass you can own. Light and compact, it boasts a fast maximum aperture making it ideal for low-light situations. Setting wide apertures also helps to play down distracting backgrounds, which makes this lens ideal for portraiture and travel. What's more, the 50mm is great for shooting in tight spaces, which earns it fans in the wedding photography community. Naturally, limiting yourself to a 50mm prime has its downsides: without the ability to zoom you have to move your feet to alter the composition, plus the field of view is fixed at 50mm (unless you attach the lens to a camera with a cropped sensor). However, such limitations can sometimes lead to greater creativity. With one lens in your kit bag you're not overwhelmed by choice, and you can concentrate on fine-tuning your composition. Over the next six pages we speak to three professional photographers who regularly shoot with a 50mm prime. Julia Trotti finds it ideal for shooting portraits in all locations and lighting situations, Lee Frost takes his off travelling and Brett Harkness likes to use his to stay in the thick of the action, while engaging with his subjects.

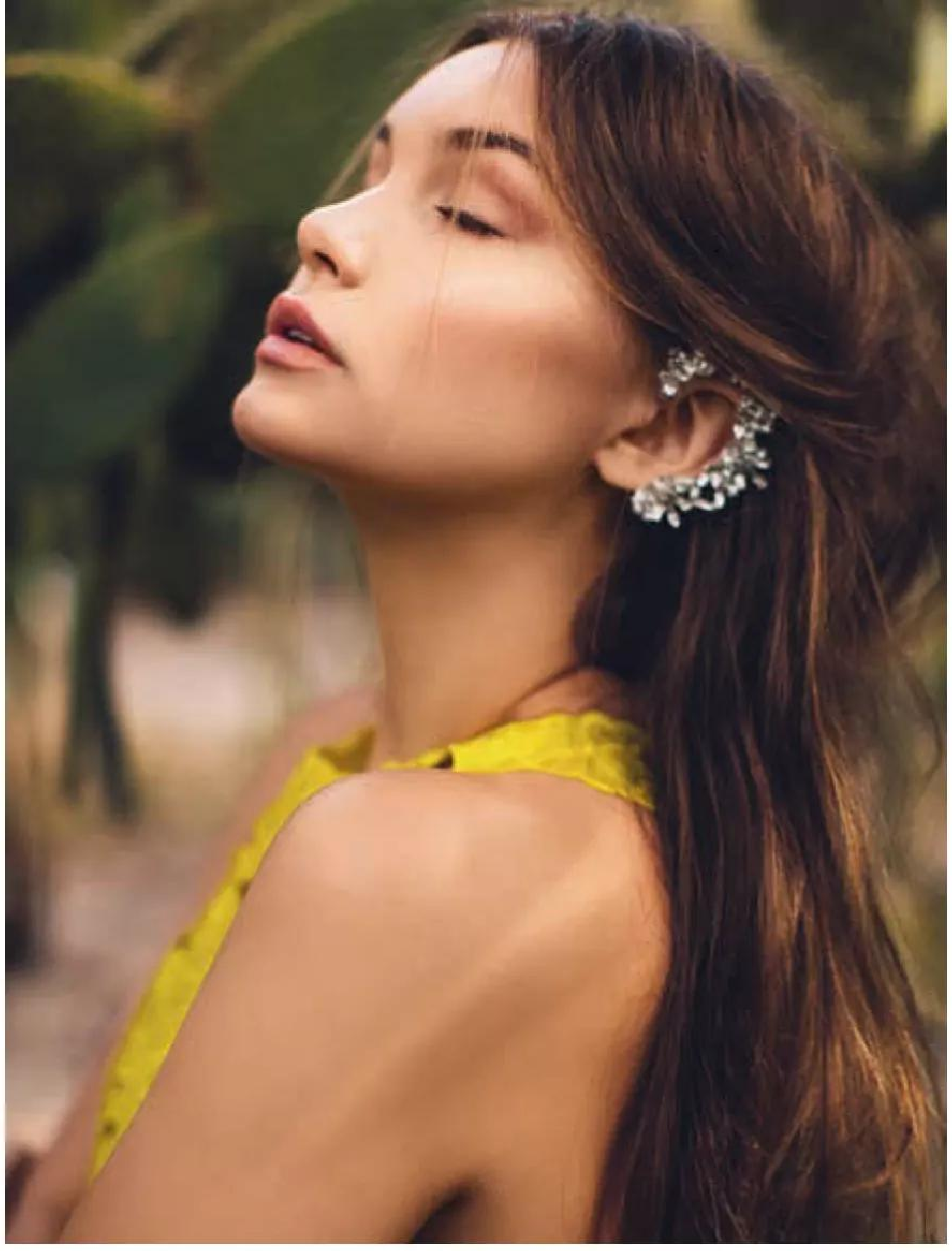
Julia Trotti

Julia is a portrait, fashion and wedding photographer from Sydney, Australia. She makes use of natural light for her work as well as prime lenses. On her YouTube channel she creates tutorials and compares kit. See **www.youtube.com/user/juliatrotti** and Instagram **@juliatrotti**

Whether shooting in a tight space, playing down distractions, or capturing movement Julia Trotti loves her 50mm lens

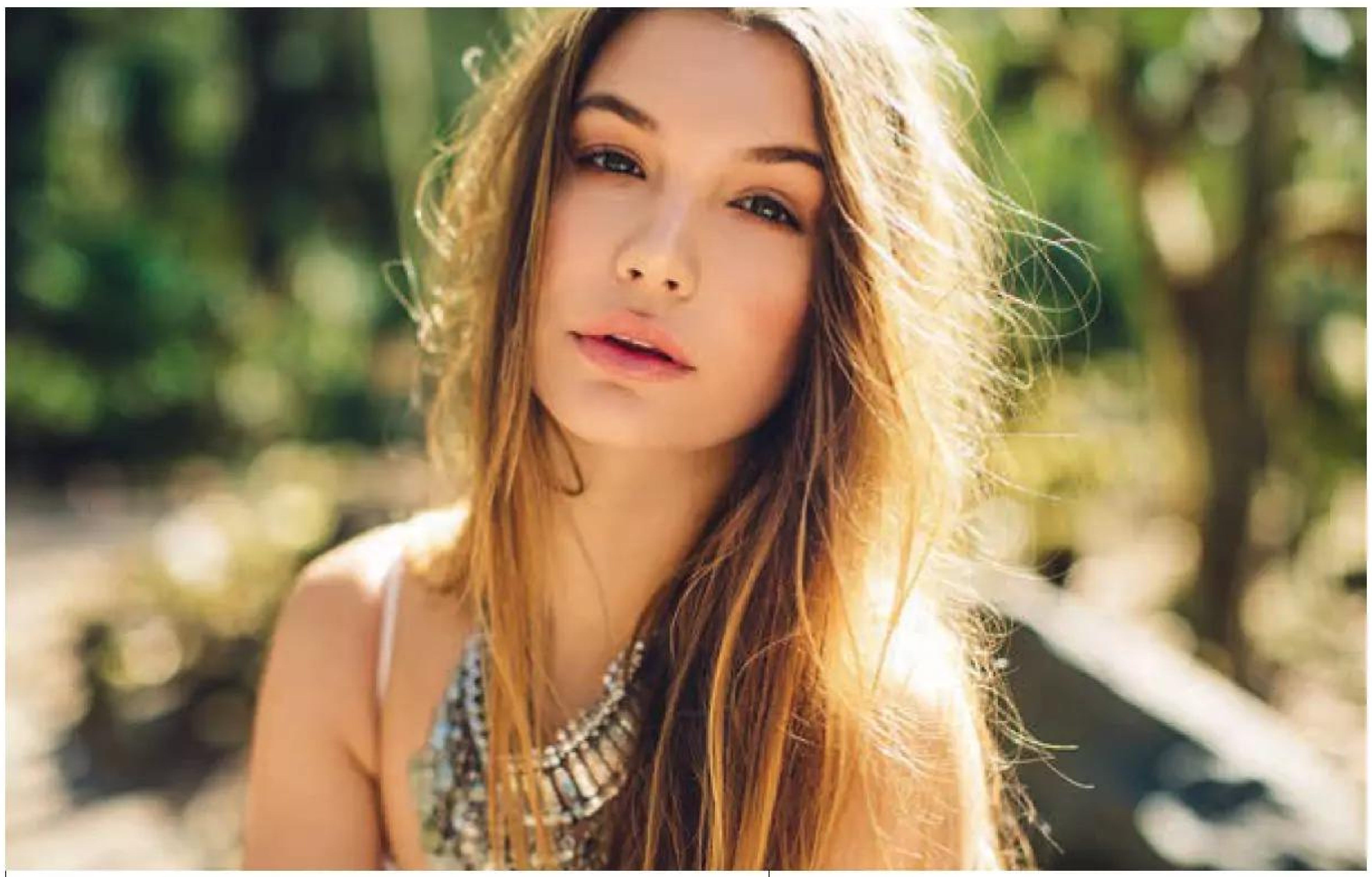
As a portrait photographer, I have a vast array of prime lenses in my kit bag. This includes wideangle focal lengths such as the 35mm f/1.4 to be able to incorporate more of the background, and telephoto primes such as the 135mm f/2, which completely diminishes the background to help my subject stand out. One of my first prime lens purchases was a 50mm, and it's a lens I keep returning to. Whether I'm photographing a studio lookbook, an outdoor fashion editorial or portraits of a couple at their wedding, the 50mm has proved itself to be a versatile focal length, giving me the ability to capture a variety of creative portraits in various locations and lighting situations. It's one of the lenses I find myself reaching for the most.

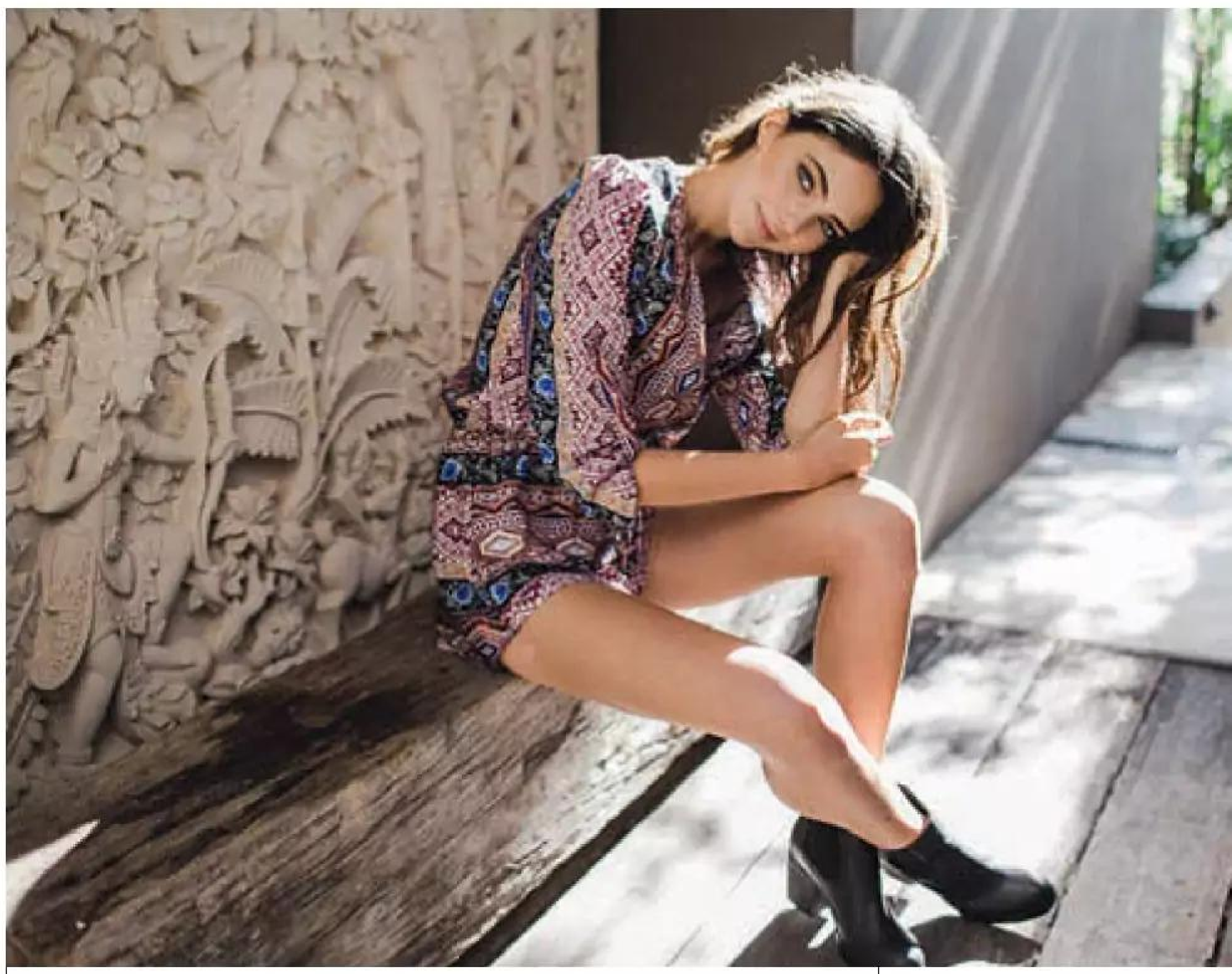
ALL PICTURES ON PAGES 70-71 © JULIA TROTTI



Boost creativity

If you feel in a creative rut, or want to try capturing something different, one of the best things to do is to set limitations on yourself. If you're used to heading to a photoshoot with a bag of lenses, try starting off the shoot with a 50mm to see how creative you can be. The 50mm is such a versatile lens, you can capture high-quality full body shots, close-up portraits and just about everything in between. Try taking as many photos, compositions and angles as you can before you switch lenses.





Play down distractions

The 50mm focal length is great to use when you're in a busy location. Whether there are a lot of people around or the background is distracting, with a prime 50mm you can shoot with wide apertures to blur all that out. Shooting with a wide aperture is a great way to bring all the attention in an image to your subject, which is one of the most important things in portrait photography.

Flatter subjects

The 50mm is a flattering focal length for portraits. Because it's in between wider primes such as the 35mm which can distort faces, and more telephoto primes such as the 135mm which can flatten faces too much in a photo, the 50mm is a great option for capturing a realistic portrait of someone without changing the way their face looks.

Show the background

If lots of bokeh isn't really your style, a 50mm is a great in-between portrait lens. It gives you just enough bokeh to make your photographs dreamy, but doesn't blur out your background so much that you can't tell what location you're in. I'm a big fan of incorporating my locations into my portrait photoshoots, so being able to see parts of the background is important in my work, which the 50mm focal length helps me to achieve.

Shoot in low light

For wedding photography, the 50mm is my go-to lens to capture shots of the guests mingling during the reception. One of the main reasons for this is the focal length – I can stay just far enough to capture natural photos of people talking and laughing without guests becoming self-conscious that I'm photographing them. The second reason is that 50mm prime lenses are usually great in low light owing to their fast apertures. By using a wide aperture of, say, f/1.2 or f/1.8, I am able to use the available natural light in a low-light reception venue instead of relying on my flash, which can be quite distracting and cause guests to become aware that I am photographing them.

Capture movement

A 50mm lens gives you a great starting point to be able to capture movement. Unlike a telephoto lens, with a 50mm you can capture more of the environment, thus giving you more room in your frame to capture a spontaneous movement. It is also easier to frame your shot without accidentally cropping out limbs if you're asking your subject to move around.

Keep it tight

The 50mm is perfect in a location without much space. While tighter prime lenses such as the 85mm or 135mm produce a beautiful, compressed look, I don't often have enough room in my locations to move around and capture a full body shot. The 50mm gives that compressed look with wonderful background bokeh with no sacrifice to the composition.

Embrace versatility

Whether you are a beginner or a professional, camera manufacturers have their own version of the 50mm lens to suit your needs. A budget 50mm for your personal work, a high-end 50mm, a cine 50mm or a 50mm with creative effects, the options are vast.

Travel

Lee Frost

Lee is one of the UK's best-known travel and landscape photographers, selling his images internationally through leading picture libraries. He is also a prolific author on the art and craft of photography and leads sell-out photo workshops and tours around the world. Visit **www.leefrost.co.uk**

When travelling, it's important to keep camera gear to the minimum. Lee Frost tells us how he does it with a 50mm lens

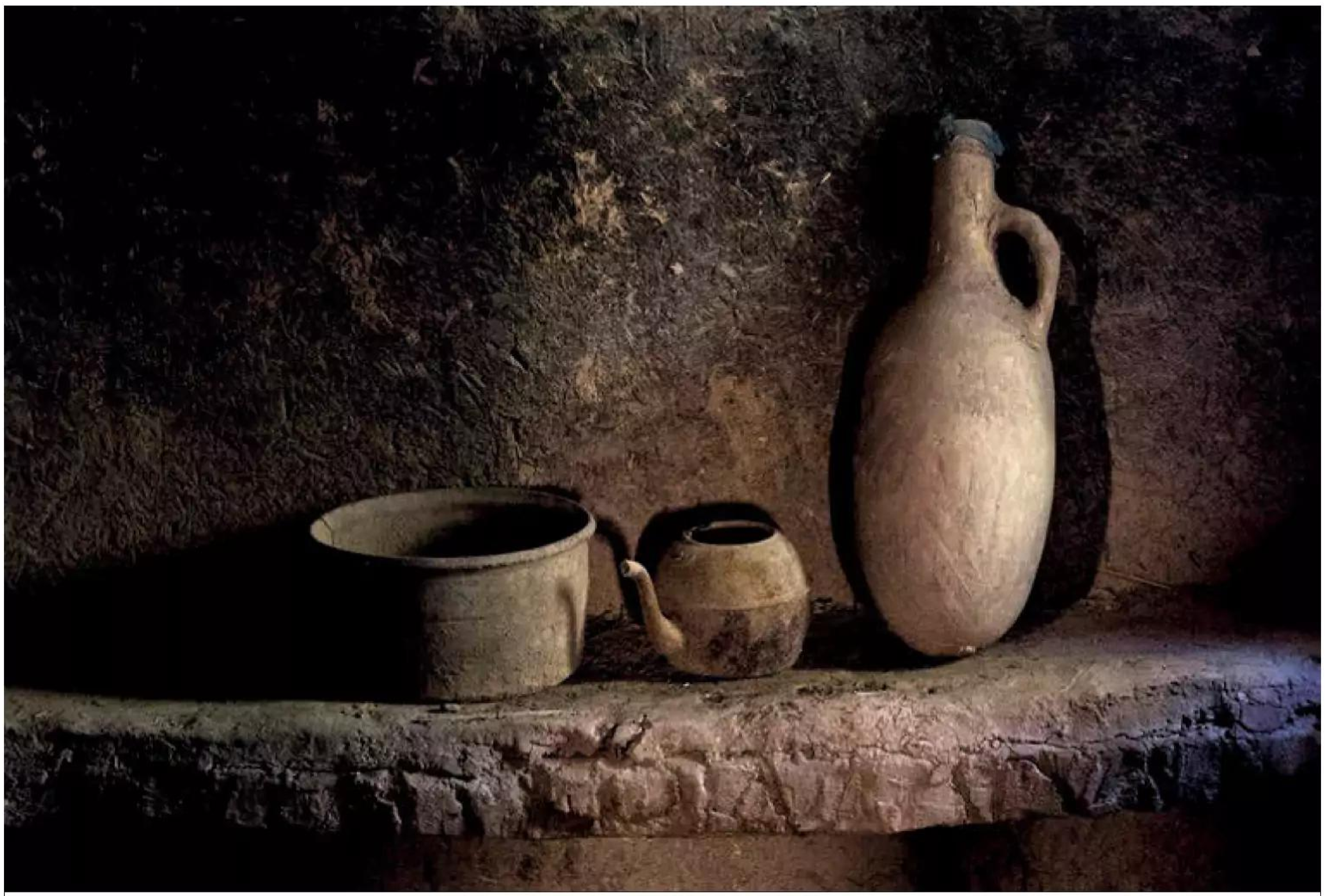
My first SLR came with a screw-mount 50mm f/2 lens. No kit zoom, just a good old fixed focal-length, manual-focus 50mm. At the time I felt short-changed. It didn't bend and stretch the world like a wideangle or magnify it like a telephoto. It just saw what I saw, pretty much. After a while, I began to see the benefits of that lens, and even when zoom lenses started to take over the world, I made sure there was space in my bag for a 50mm.

Fast forward some 40 years and it's still the case. When I travel, my Canon 50mm prime travels with me. I have a 24-70mm zoom that covers the same focal length, but the two lenses are like chalk and cheese. They serve different purposes, and the prime 50mm has got me out of more sticky situations than I care to remember.

ALL PICTURES ON PAGES 72-73 © LEE FROST

Shoot handheld

The wide maximum aperture of a 50mm lens not only means you have a nice, bright viewfinder image, but it also allows you to shoot handheld at decent shutter speeds in low-light situations where slower zooms would let you down. For example, if you were getting a shutter speed of 1/30sec at f/1.8 with your 50mm, in the same situation a 24-70mm f/4 zoom wide open at f/4 could only manage a shutter speed of 1/6sec.



Move your feet

Zooms can make you lazy. Instead of using your feet and physically moving closer to or further away from the subject, you tend to flick your wrist and the lens does that for you.

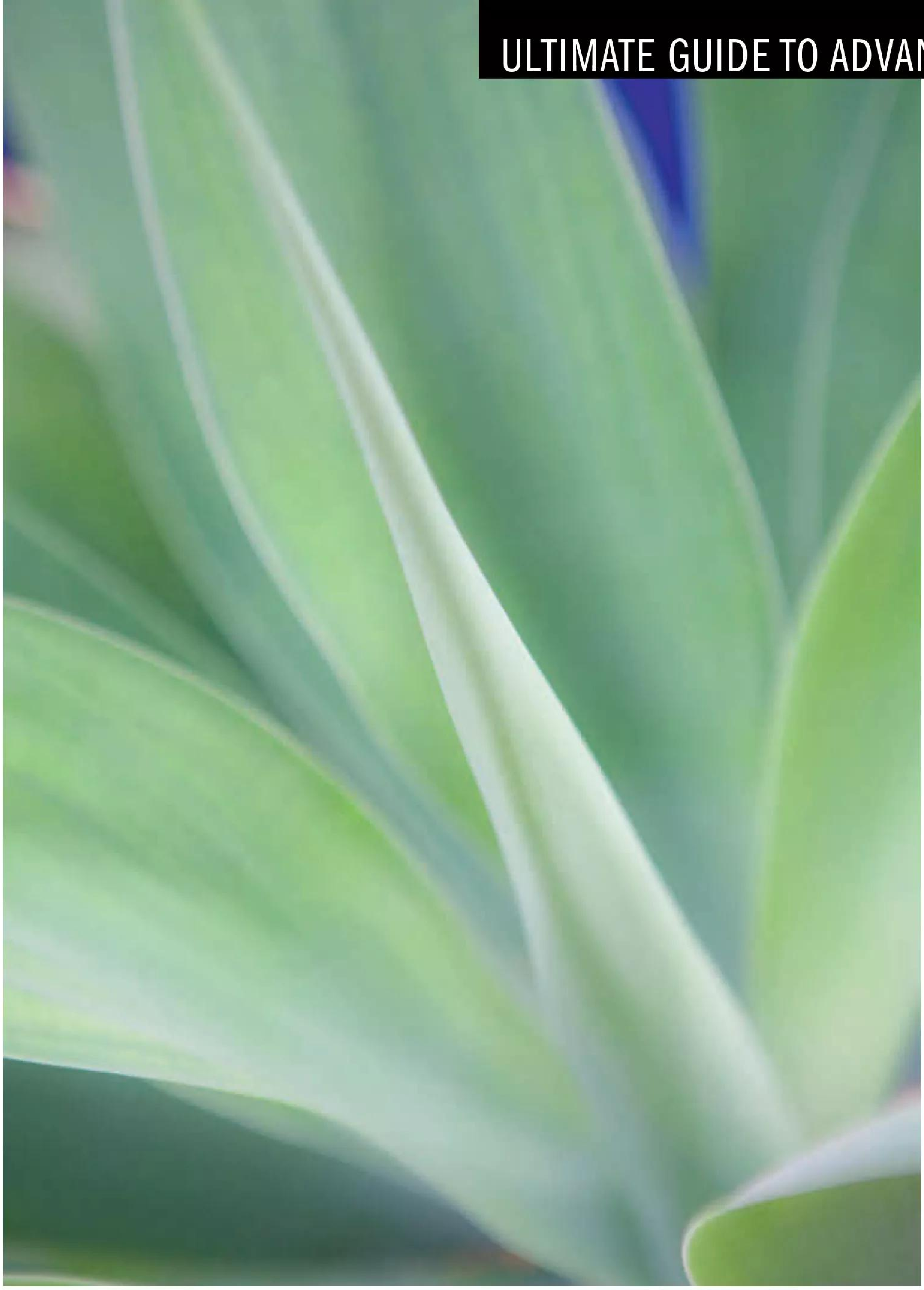
Sometimes, though, it's better to move yourself. A fixed-focal-length lens like the 50mm gives you no choice, so as well as producing great images, it can make you a more considered photographer.

Keep it light

Photographers tend to carry far more gear around than they really need, which can be tiring when you're on your feet all day. The perfect antidote is to leave everything behind except a camera body and one lens – and what better lens than the 50mm prime, for all the reasons discussed earlier.

Look sharp

The optical design of prime lenses is simple compared to zooms, which ultimately means sharper images. Even the cheapest 50mm primes are super-sharp and produce crisp, contrasty images throughout the aperture range, while the more exotic options are the sharpest lenses on the planet. If image quality is high on your list of priorities, you really need to buy a 50mm lens.



Capture details

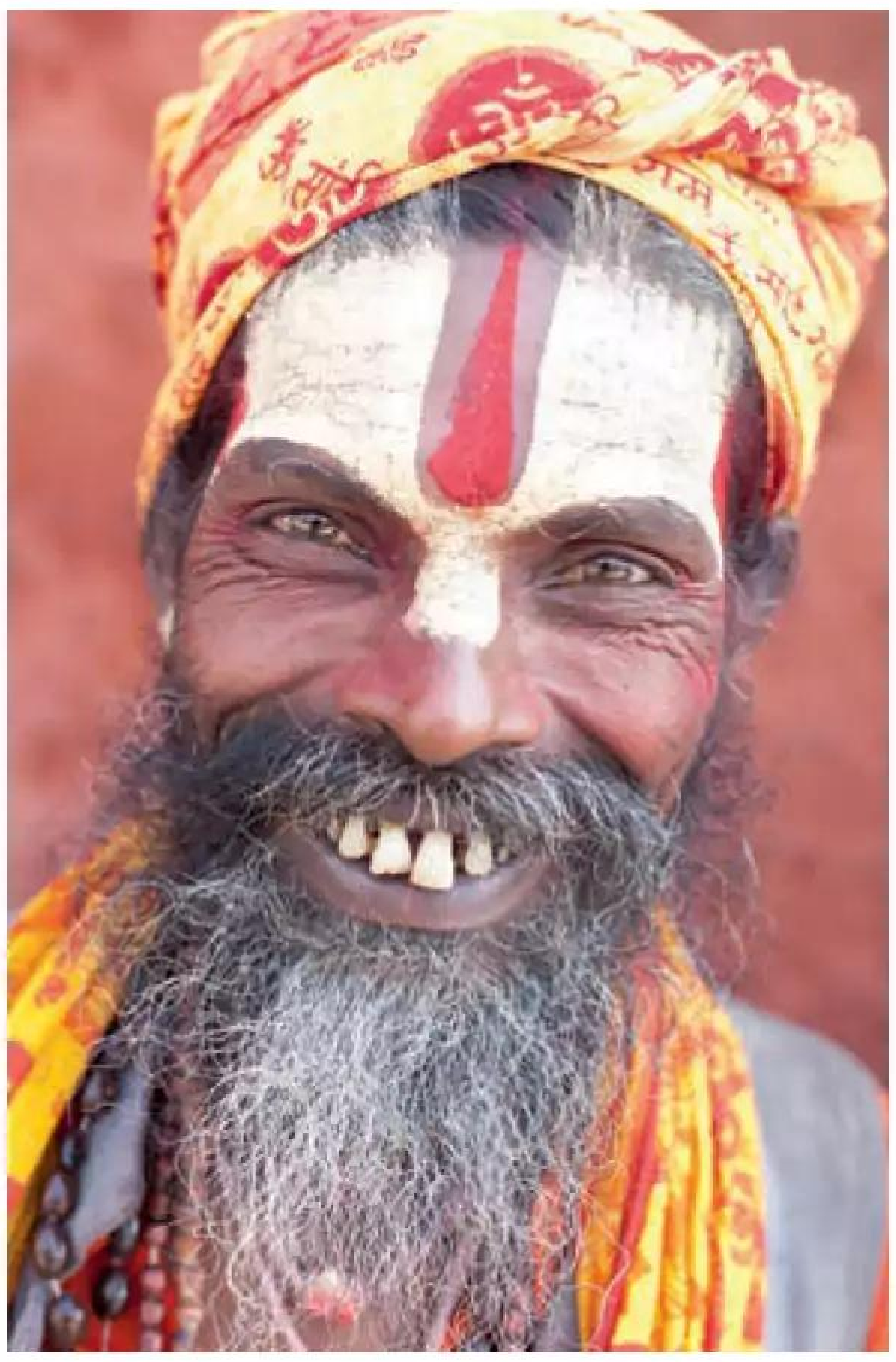
The 50mm focal length is highly versatile and can be used to shoot a wide range of subjects. I regularly use my 50mm for low-light portraiture when I'm travelling. Architecture and landscape are also well suited to the angle of view, and the perspective is very natural. It's also great for detail shots and with a minimum focus of 35-50cm, depending on the lens, allows you to get reasonably close.

Reduce DoF

The maximum aperture of a 50mm lens is handy for reducing depth of field, throwing distracting backgrounds out of focus. If your standard zoom has a maximum aperture of f/3.5 or smaller, you'll notice a big difference if you use a 50mm f/1.8 or f/1.4 wide open. Depth of field will be reduced to a few inches, so focus carefully – on the eyes when shooting portraits. The bokeh is also good with most 50mm lenses used wide open.

Small and light

Another reason why the standard lens is easier to handhold at slow shutter speeds is because it's so light compared to a zoom. For comparison, my Canon EF 24-70mm f/4L IS USM zoom tips the scales at 600g, whereas the Canon EF 50mm f/1.8 STM weighs only 160g. The 50mm is also tiny compared to your average zoom and takes up minimal space in a backpack, so you need never leave home without one.



Experiment with a cropped sensor

If you put a 50mm standard lens on a DSLR with a crop sensor, the effective focal length will be 75-80mm, depending on whether the crop factor is 1.5x or 1/6x. This makes the lens better suited to portraiture than a 50mm focal length, as you'll get slight foreshortening of perspective, which flatters features.

Brett Harkness

Brett's photography covers everything from high-end weddings to portraiture. He's well known for his fun and cutting-edge approach. See **www.brettharknessphotography.com**; Instagram **@brettharkness**, Twitter **@brettharkness**; Facebook **Brett Harkness**

UK wedding photographer Brett Harkness explains why over the past ten years or so, a 50mm lens has become his staple

My first camera was a Pentax ME with a fixed 50mm lens. This set-up forced me to get close to my subject, and it also taught me the art of composition. It's all too easy now for photographers to put on a zoom lens and forget to move their feet. I think using a zoom makes composing a shot harder, as there are just too many options. Getting used to one or two lenses can turn you into the photographer you want to be. It certainly did with me. It changed the way I look at the world. If I'm shooting a wedding then a 50mm lens allows me to include some of the environment around my subjects, while staying close enough to continue engaging with them. It also places me in the thick of the action and encourages me to move my feet. When I have to work a bit harder it really pushes me creatively – so pick up your 50mm and give it a go.

Embrace the bokeh

My Canon L lens has the softest bokeh of any lens I've used, and that's the main reason why I love it. Yes it can be soft, but there is a special quality to this softness. I often shoot at f/1.2 or f/2, but my preferred aperture for most jobs is f/3.5. At this aperture the subject will be sharp, while the background will have the desired softness. Shooting anything with an aperture of f/1.2 is not for the faint-hearted, but it can give a wonderful ethereal look to your images.

ALL PICTURES ON PAGES 74-75 © BRETT HARKNESS

Save your back!

I'm not a big fan of carrying half of the camera shop around with me when I'm shooting a wedding, and I'm often running around London, so I like to keep my gear to a minimum. A 35mm or 50mm lens is ideal; no heavy zooms required!

Keep things comfortable

If you're confused about which focal length is right for you, then try a 24-70mm if you have one, or borrow one. This is what I did years ago. I would shoot one job on 24mm, then 35mm, then 50mm, then 60mm, and then 70mm until I went back to 50mm as the focal length I was most comfortable with. A lot of my friends swear by their 35mm lens – I do use one, but I find that the 50mm and I have created a style that suits us.

Get out of the rut

A lot of photographers come on my courses because they feel stuck creatively. We all go through this at certain times in our careers. So if you have been using a certain focal length for a long time, maybe it's time for a change. This simple shift can alter the way you 'see' through the camera and be quite liberating.

Create a true representation

When I used the 70-200mm as my main lens (which I did for more than six years) I would shoot tight on my subject, usually in the vertical (or portrait) orientation. This meant that I often forgot about the environment around the subject. Later I realised that including what is around the bride, groom and guests makes a client look back on their images as a true representation of the event. Now I would say it's a 60/40 split. There is an ideal distance from which to photograph the face – any closer or farther away and it can look distorted, so bear that in mind when you are using a 50mm lens.

Fine-tune your style

It's essential to create and fine-tune your style if you want to produce work that's consistent while also standing out from the crowd. One way of doing this is to use a fixed-focal-length lens. For weddings and family shoots I opt for a 50mm – although I do use a wideangle now and again. Using one lens has allowed my style to develop and has become a part of the way I see things.

Keep interacting with your subject

Some photographers might argue that it's boring to shoot with the same lens all day, but I find the opposite to be true – it allows me to concentrate on interacting with my subjects, enabling me to get more out of them and the situation. I believe that if you can keep the amount of equipment between you and your subject to a minimum, you will get the best from the moment and the person in front of you.

Move in close

I accidentally left my zoom lens at home and had to shoot a wedding with my Canon EF 50mm f/1.2L USM because it was all I had on me! That was more than eight years ago, and this lens has now become my go-to. Instead of hiding in the bushes with a 70-200mm lens I am in the thick of the action, and often in people's personal space. This is where the magic happens, and it allows me to capture moments that might otherwise remain unseen. It takes confidence to move in close, but be brave and go for it.

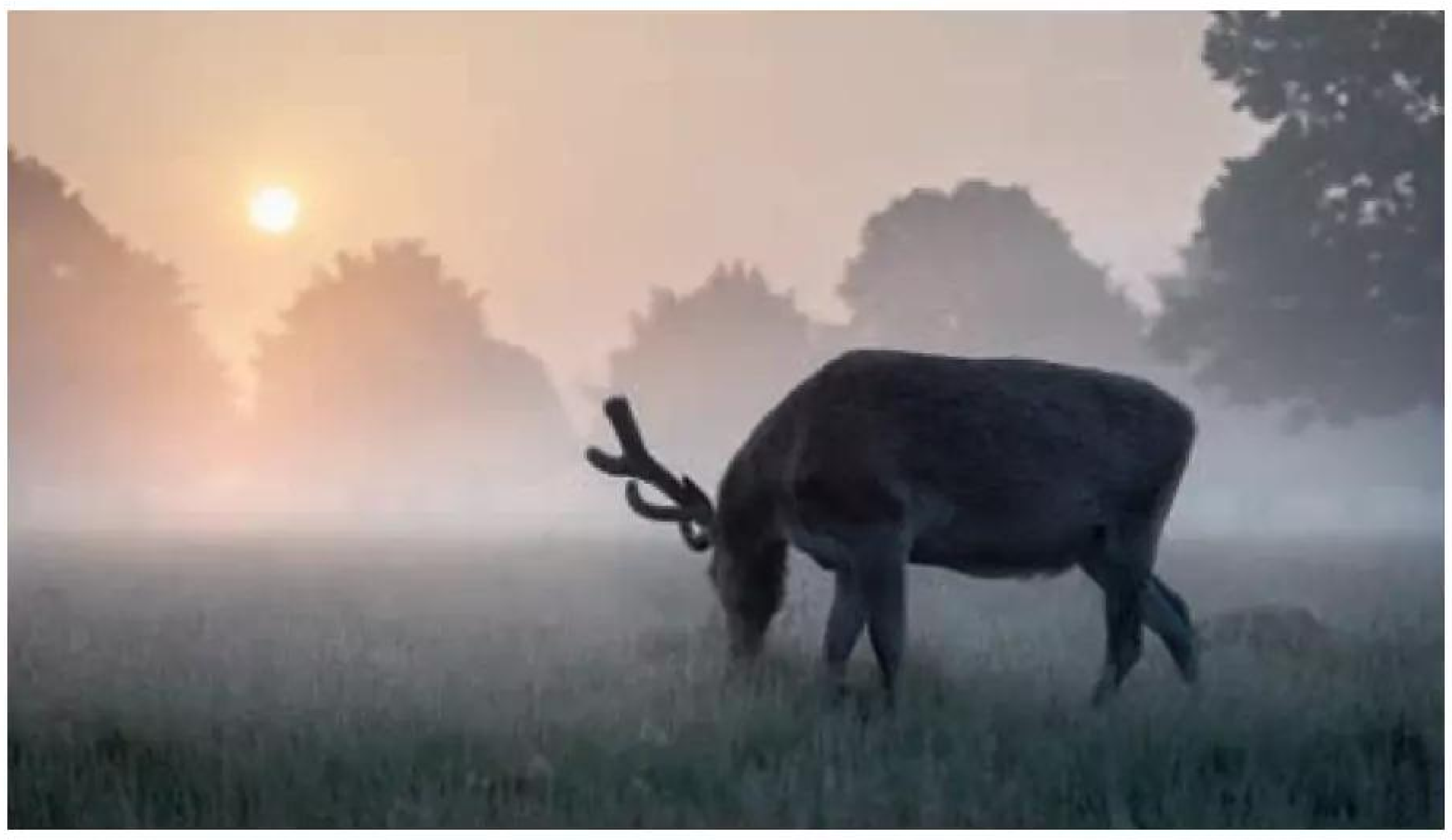
When the **wrong lens** is the right one

Wideangle lenses are most commonly associated with landscapes, while telephotos are not the first choice for close-ups unless, of course, you use a little imagination

Wideangle for wildlife

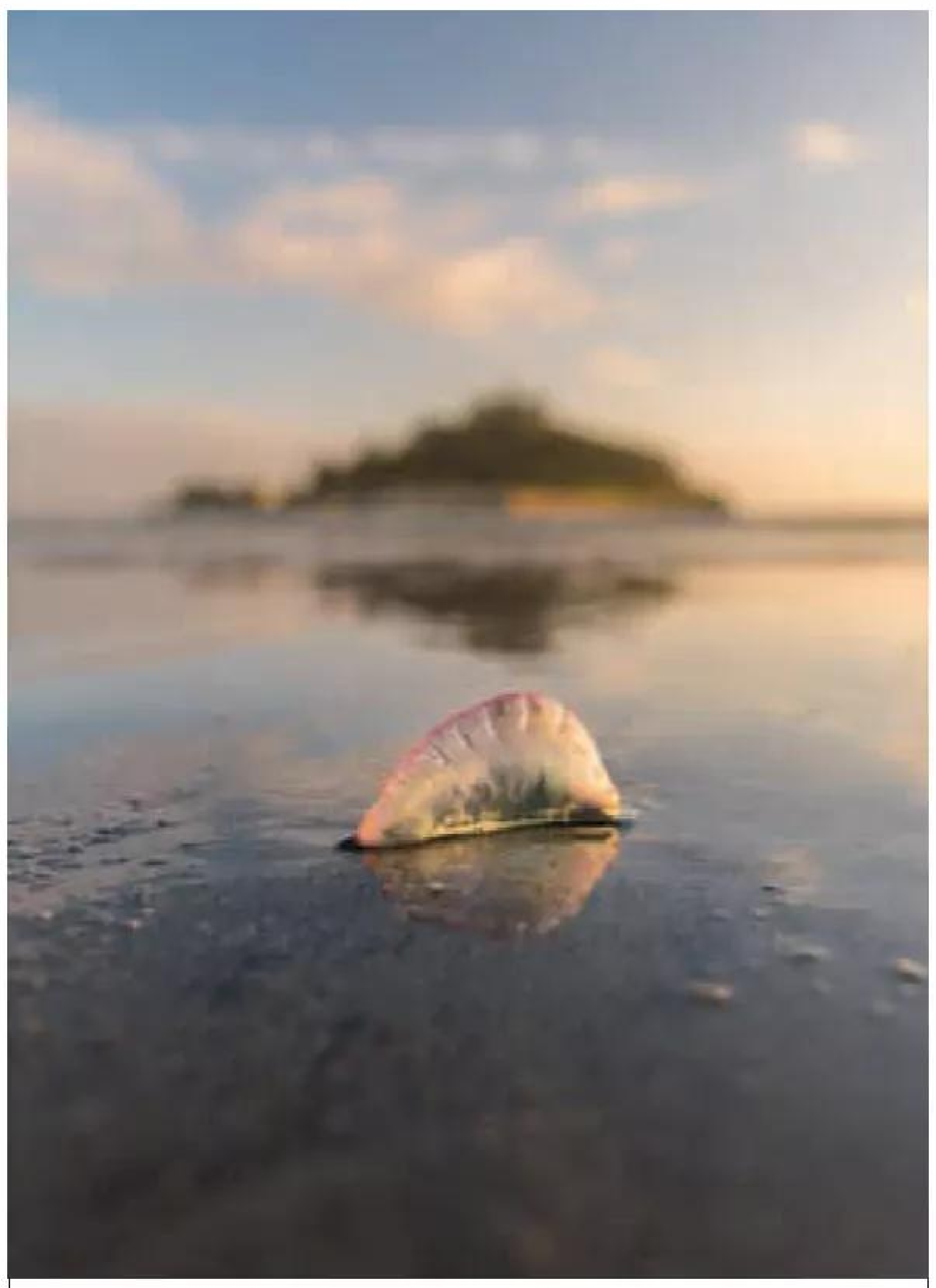
Matthew Cattell

Matthew Cattell is an award-winning outdoor photographer with a passion for promoting the natural world through his photography, which covers everything from panoramic vistas to small details, and aspects of animal behaviour. Visit **www.matthewcattellphotography.com**



Work on a local project

Stay close to home (or near your place of work) and turn your shoot into a long-term project. You'll develop a deeper understanding and appreciation of both your subject and its environment, and staying local means you can more readily react to favourable weather conditions.



Include a point of reference

Consider including a recognisable point of reference such as a building or beauty spot to provide context. Whilst separation between subject and landmark is desirable, it is not always necessary for the landmark to be in sharp focus if its shape is recognisable.

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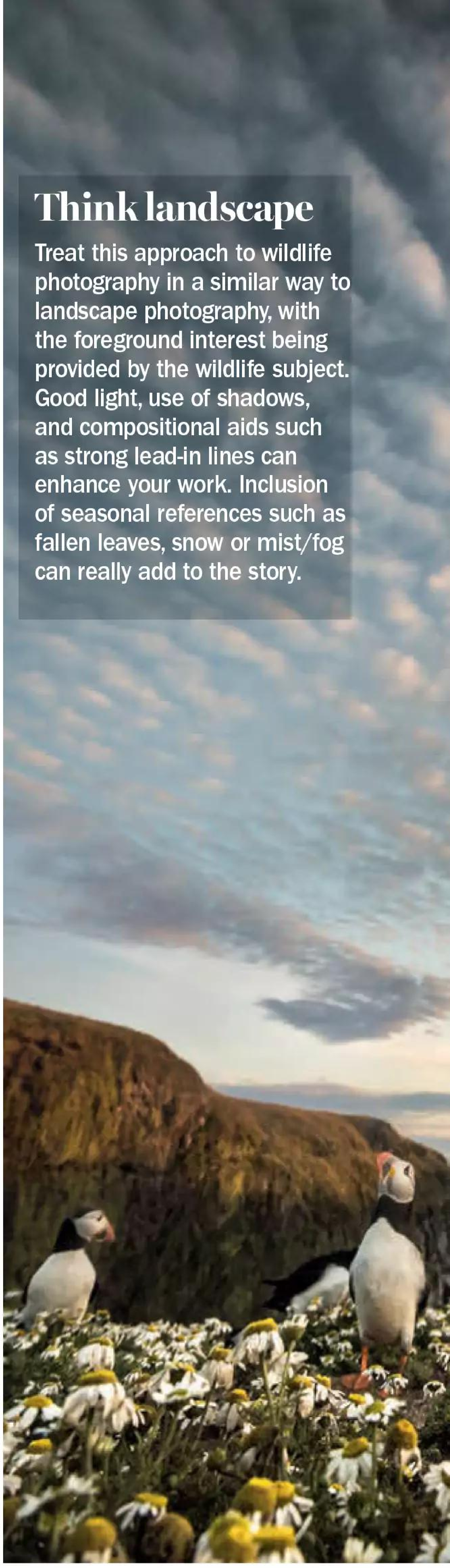


Think landscape

Treat this approach to wildlife photography in a similar way to landscape photography, with the foreground interest being provided by the wildlife subject. Good light, use of shadows, and compositional aids such as strong lead-in lines can enhance your work. Inclusion of seasonal references such as fallen leaves, snow or mist/fog can really add to the story.

Please note

It's never acceptable to cause distress to your subject whilst in pursuit of a photograph – this is particularly important when working with wildlife and wideangle lenses.

KIT LIST

Wideangle lens

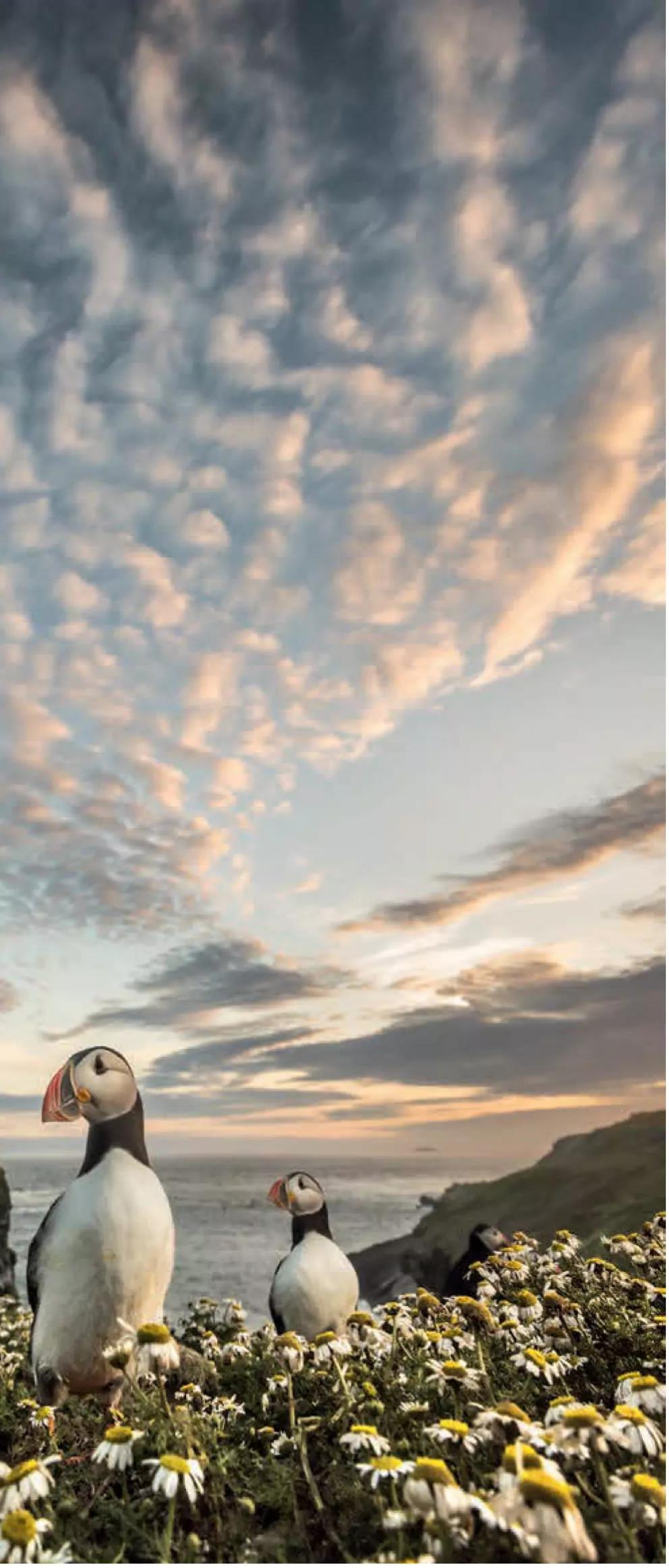
The foreshortening effect created by using ultra-wide focal lengths can add impact to your photography. What's more, wideangle lenses are usually lightweight and compact.

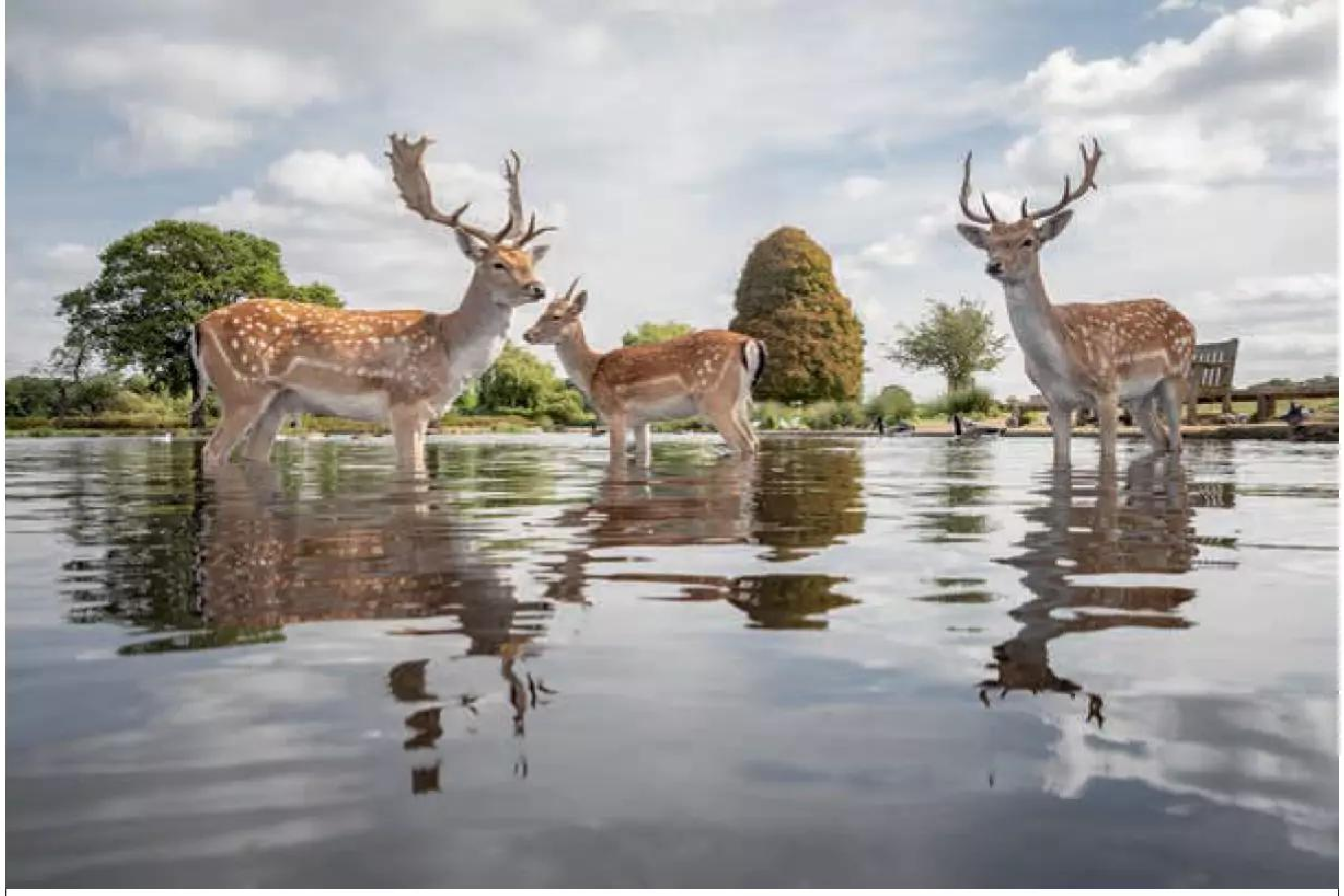
Flashgun

A flashgun is useful in low-light conditions to complement natural light or to provide a little fill-in during the day. You'll need to pair it with a trigger and receivers if you want to try off-camera flash.

Beanbag

When working low to the ground with a wideangle lens it's often necessary to react quickly to changing conditions and moving subjects. I find that a beanbag provides excellent support and is easier to shuffle about than a tripod.



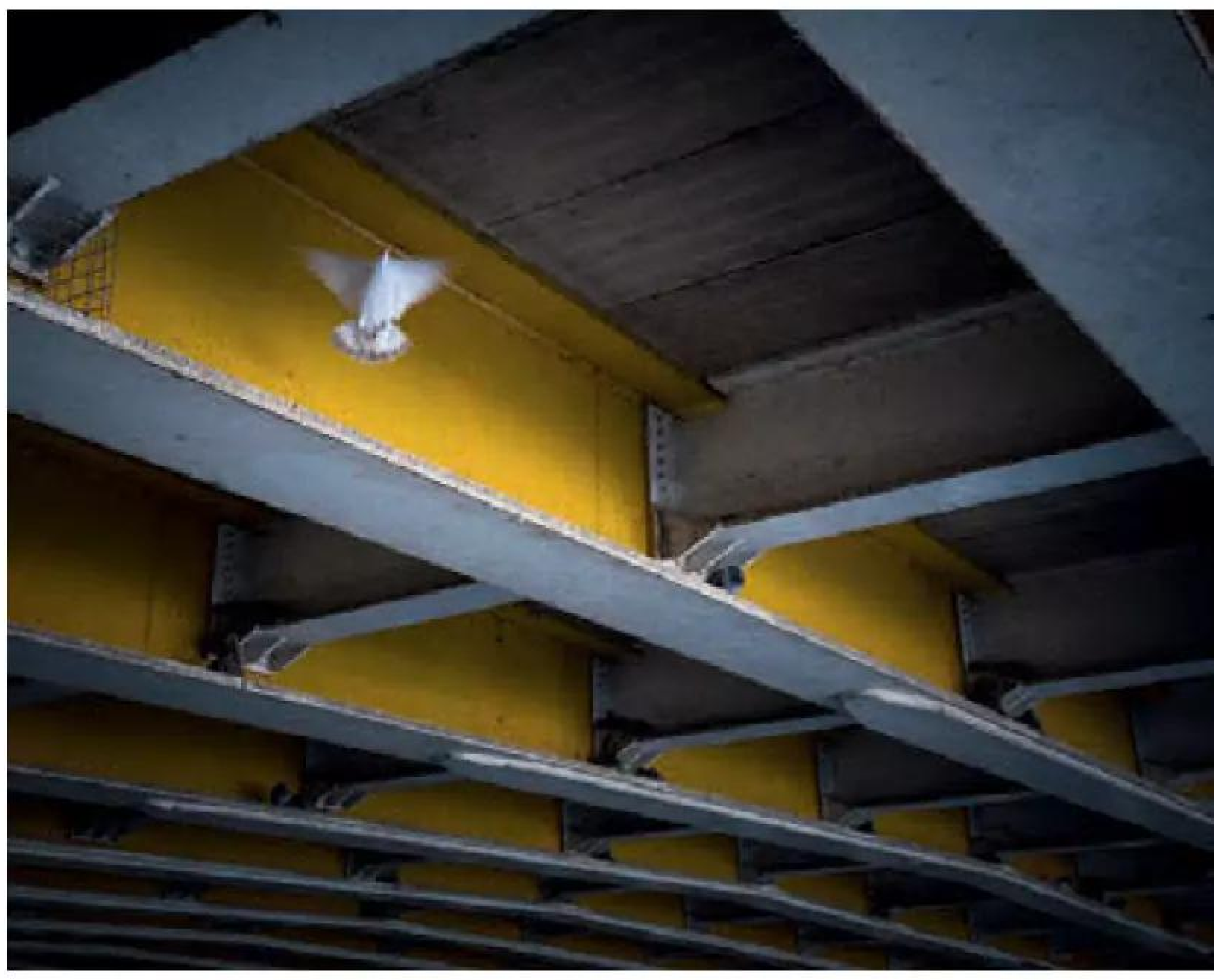


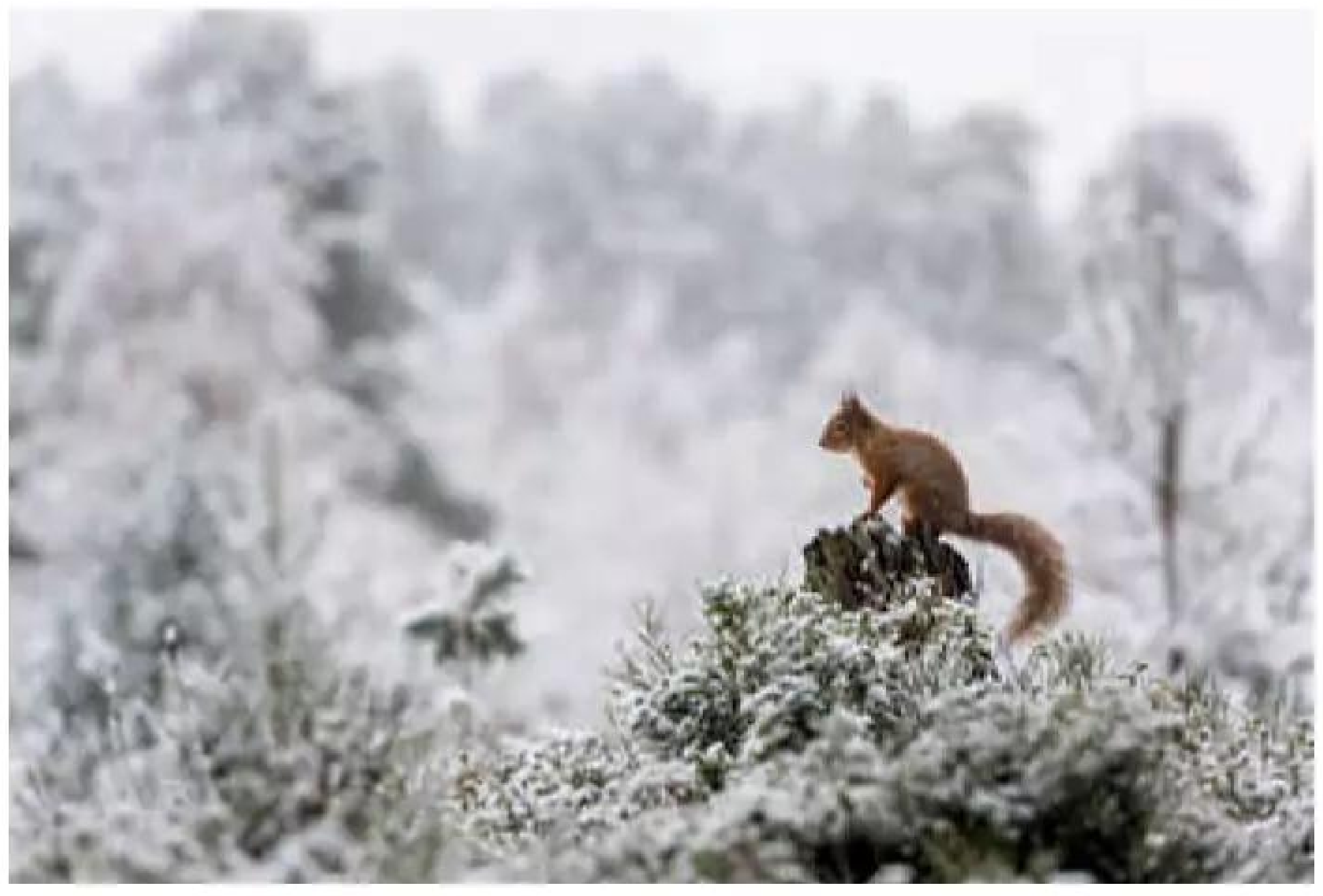
Shoot low

Wildlife is nearly always best photographed at eye level to provide a more intimate connection between the subject and viewer. This requires the camera to be placed on/near to the ground, a task made much easier with the latest cameras that usually have foldout screens.

Explore urban environments

With bold colours, reflective materials and strong, geometric patterns, towns and cities are exciting places to photograph wildlife in. The wildlife is often more habituated to humans, making them easier to work with without causing distress, and there is also the opportunity to record how your subject interacts with human day-to-day life.





Provide context

If there is a strong connection between your subject and its environment it's not always necessary or desirable to fill the frame. Keeping the subject small in the frame will allow you to show its environment and give it space to breathe. It can also be used to enhance the feeling of 'remoteness'.

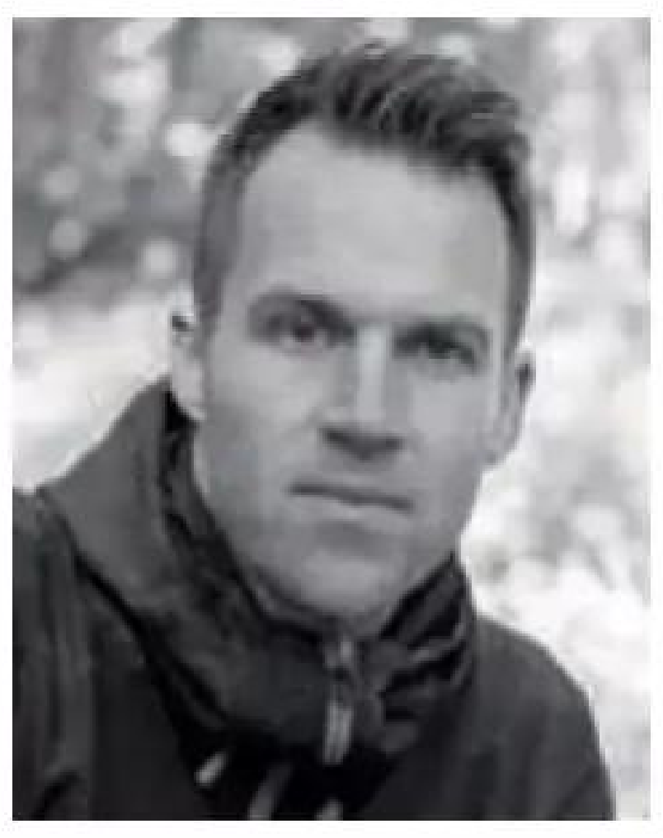
Experiment with flash

A flash can be used to provide fill-in light, helping your subject to stand out. It can also be used to create a pleasing catchlight in the eye, preventing the subject from appearing lifeless. Although more tricky, it's worth experimenting with off-camera flash to create enhanced lighting effects.

Record behaviour

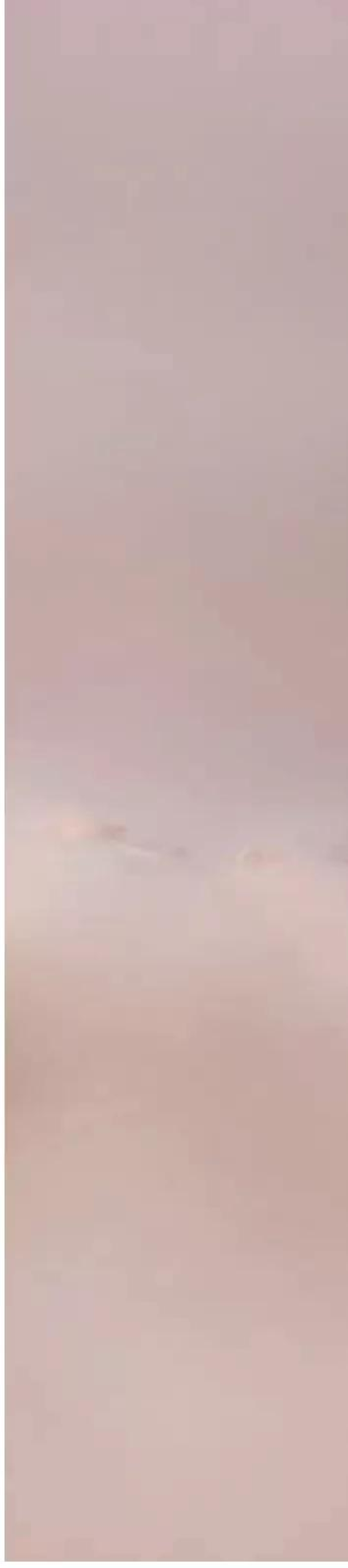
As with telephoto wildlife photography, capturing a moment of unique behaviour can elevate your images. There are benefits to working with wider focal lengths as interactions between animals often take up more space than a static pose. You can also include interaction between your subject and its environment.

Telephoto for macro



Ross Hoddinott

Ross is one of the UK's leading landscape and natural history photographers. He lives in Cornwall, is the author of several photography books and is a popular and experienced tutor. He is also a Manfrotto Ambassador and Nikon Alumni. Visit **www.rosshoddinott.co.uk**



Isolate detail

The magnification of a telephoto is great for isolating detail. You can take frame-filling close-ups with loads of impact. By cropping in to a small sliver of a subject, you remove context for abstract results. Study the world around you closely, and crop in to highlight colour, shape and form.

Use a fast shutter speed

To eliminate shake when using a telephoto, select a suitably fast shutter. I would recommend using the '1/focal length' shutter speed rule – for example, if using a 300mm lens, select a shutter speed upwards of 1/300sec. If using a cropped sensor, remember to first multiply your focal length by the crop factor to provide the focal length in 35mm terms. Also, switch on lens or camera stabilisation.

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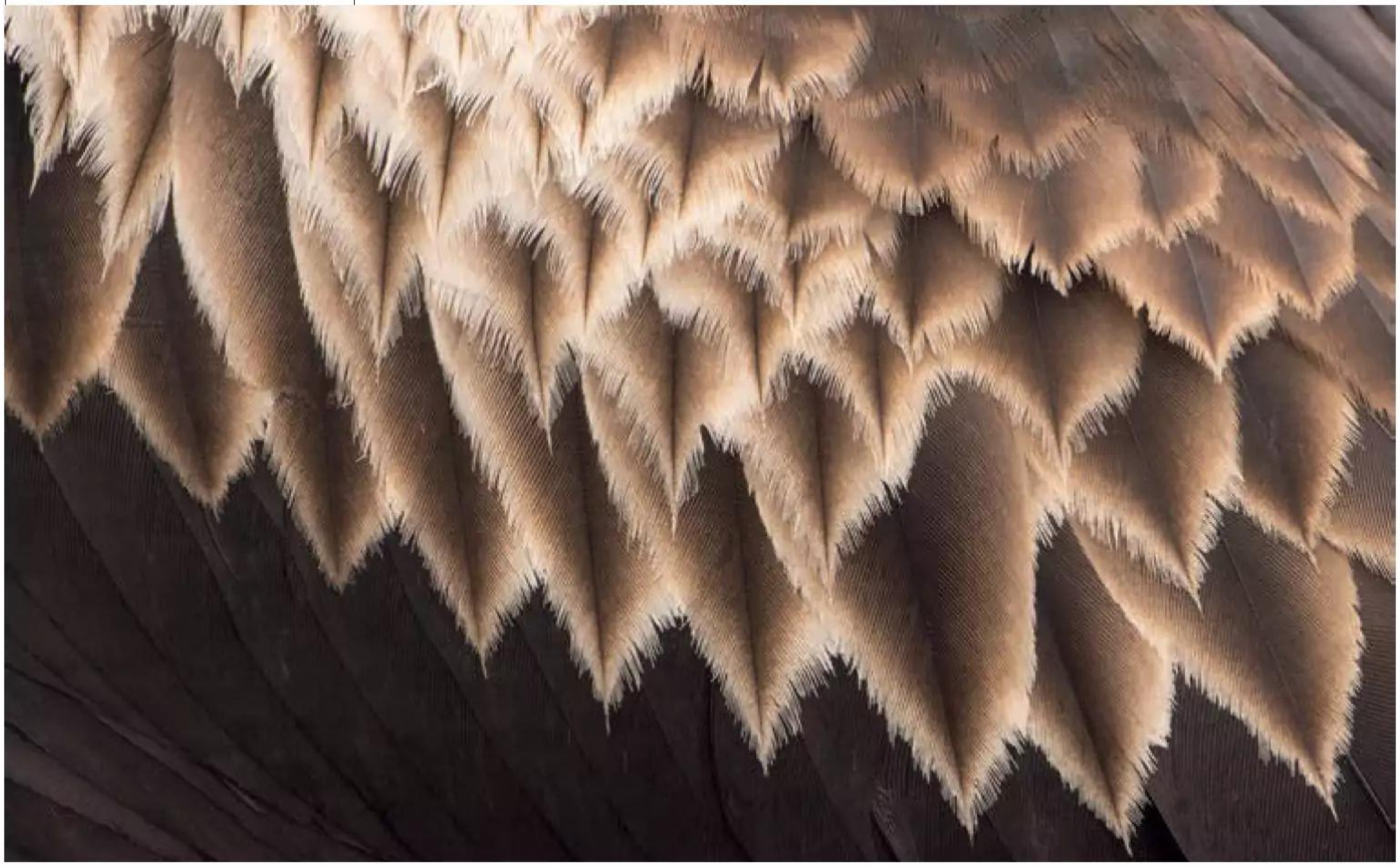

Work further away

While a macro lens is the obvious choice for shooting insects, a longer telephoto will allow you to work further away from the subject. This will minimise the risk of disturbing nervy subjects, and maximise your chances of success. Most modern telephotos have a useful short minimum focusing distance in the region of 1-2m and a reproduction ratio of 1:2 or 1:4 life-size, which is ideal. If your telephoto lens doesn't focus close enough – or you wish to achieve a 'true macro' magnification of 1:1 – attach an auto extension tube (see panel below).

KIT LIST

▼Teleconverter

These are great for close-ups, increasing the effective focal length, yet retaining the same minimum focusing distance. Image quality is reduced slightly, and they will reduce the maximum speed of your lens by up to two stops.

2X DGX for Canon EF mount
Made in Japan

▼Auto extension tubes

These are hollow rings that fit between the camera and lens, reducing the lens's minimum focusing distance, thereby increasing the lens's maximum magnification.

▼Beanbag

For ground-level work, a beanbag is arguably the best accessory for supporting and stabilising longer lenses. They are quick and easy to position; will dampen any vibrations; and will help keep you steady.

Use manual focus

When using a telephoto for close-ups, depth of field will be wafer-thin, meaning there is absolutely no leeway for error when focusing. Manual focus is often most precise. And with some lenses, the minimum focusing distance decreases slightly when you switch to manual, meaning you can get closer to your subject and increase magnification. If you are able to use a tripod, focus via live view for added accuracy.

Try a different shooting angle

Telephotos have a narrower field of view than short length lenses – a bonus when shooting close-ups. As the lens is 'seeing' less of the background, it is easier to change or improve the look or colour of your subject's backdrop by slightly altering your shooting angle.

Support will be needed

Longer lenses are harder to use handheld owing to their bulk and weight, and your movement will appear exaggerated at higher magnifications. Therefore, support your lens whenever possible. A tripod is the obvious aid, but for low-level work (when photographing wild flowers or reptiles, for example) use a beanbag (or crumpled up fleece/hoodie) to stabilise your set-up.

Keep backgrounds simple

Telephotos don't just provide a more generous camera-to-subject working distance, but they also provide better background blur – or bokeh. Longer focal lengths have more limited depth of field, so distracting background clutter will quickly be reduced to an attractive blur (at large and mid-range apertures).

Consider increasing ISO

For a suitably fast shutter speed, you may need to increase ISO. You could do this manually or with auto ISO. In auto ISO, the camera will adjust sensitivity automatically to maintain the shutter speed you desire relative to the light. For example, if you don't want your shutter to fall below 1/500sec, select shutter priority mode and dial-in this speed. When using auto ISO, I recommend selecting a maximum sensitivity to ensure ISO doesn't rise too high and degrade image quality. For instance, if you are happy with your camera's ISO performance up to ISO 6400, enter this as your upper limit.

Lensbaby for arty effects

Lee Frost
Lee is one of the UK's best-known travel and landscape photographers, selling his images internationally through leading picture libraries. He's also a prolific author on the art and craft of photography and leads photo workshops and tours around the world. Visit **www.leefrost.co.uk**

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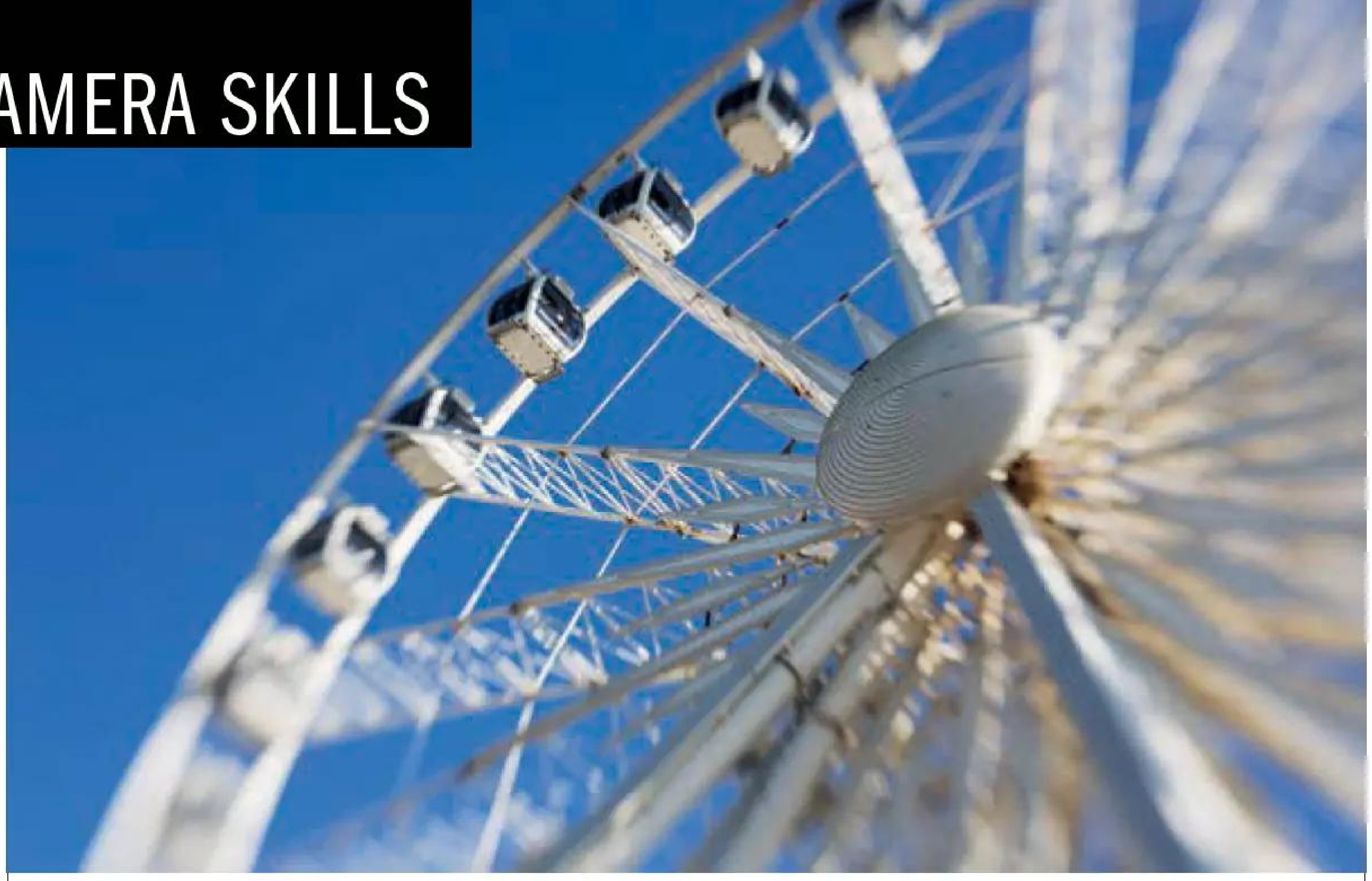
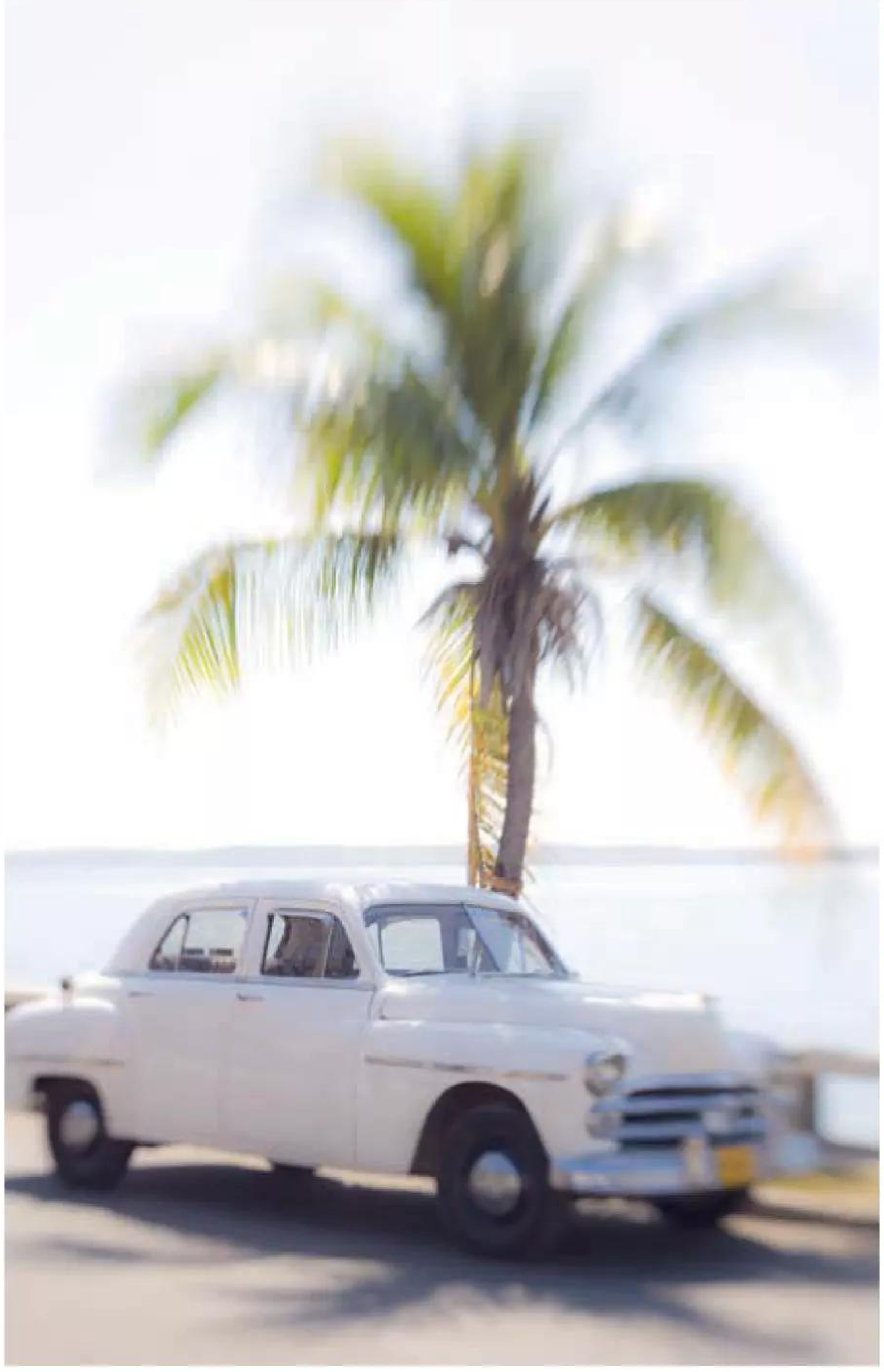


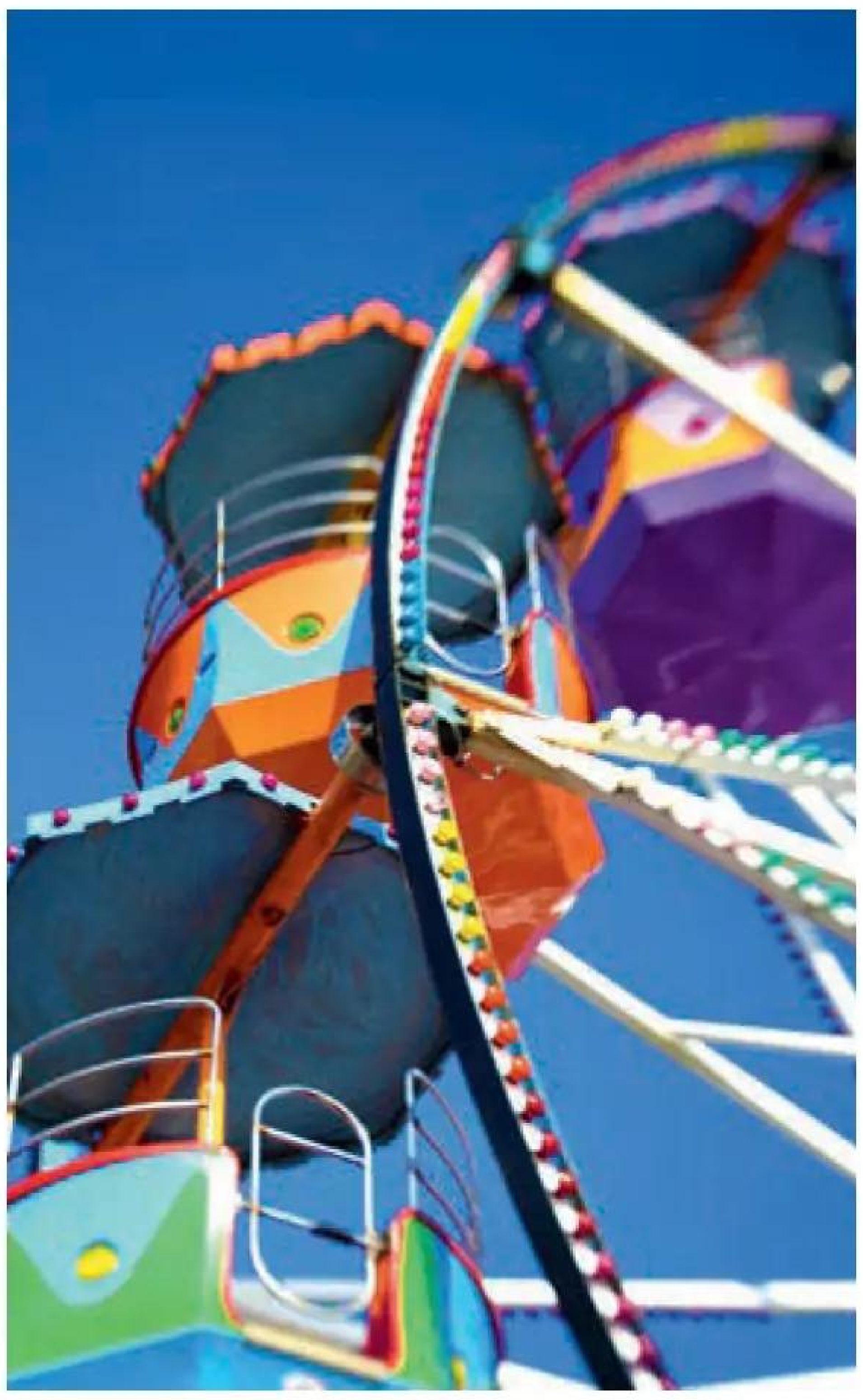
Tilt the Spark

Although the Lensbaby lends itself to keeping your main subject in the centre of the frame and surrounding it with blur, you can also produce some great effects by tilting the Lensbaby Spark, so the 'sweet spot' is moved towards the edge of the frame. Be gentle though – it only takes a slight shift to move that point, so if you're heavy-handed you'll struggle to get the effect you want.



Practice makes perfect

The idea behind the Lensbaby is that it replaces your normal camera lens and allows you to experiment with creating artistic images where one part of the image is sharp while everything else is blurred and out of focus. They're fairly easy to use, and great fun too, but like most things photographic, you do need to practise a bit to get the hang of things.



Keep it simple

Stick to simple, bold and colourful subjects – if the composition is too cluttered, the final image will be messy and confusing. In sunny weather, shoot from a low viewpoint to capture your subject against the sky. The Lensbaby effect also works well on backlit subjects.

Try different modes, including manual

There's no electronic contact between the Lensbaby and your camera so it's recommended that you set your camera to manual exposure mode. However, you can shoot in aperture priority, shutter priority and program mode as well. Just be aware that in contrasty conditions you may need to use a fair amount of exposure comp to gain an accurate exposure.

KIT LIST

SPARK
LENSBABY

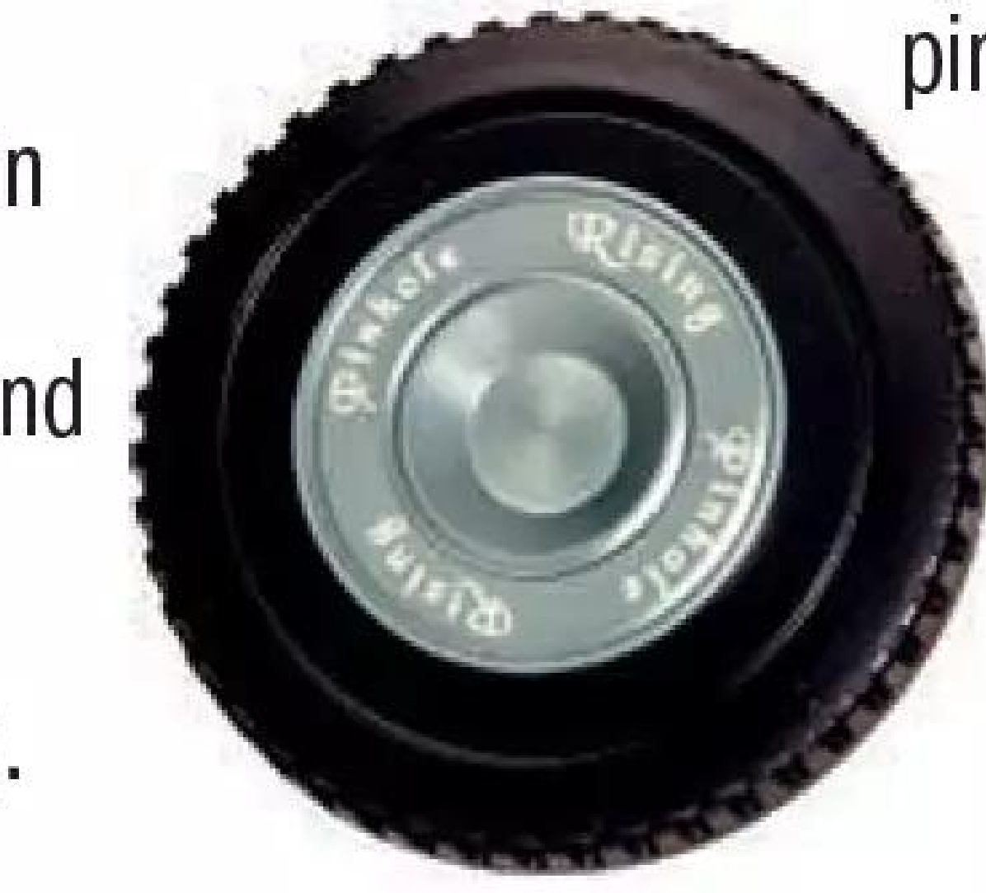
Lensbaby

Try the 'Spark', which has a fixed f/5.6 aperture plus a focal length of 50mm. Or the Creative Bokeh Spark, with a fixed f/2.5 aperture, it can be fitted with shaped discs to change the bokeh. See www.lensbaby.com.

1:8
HL-C
f=60mm
Holga Lens for Canon DSLR Camera

Toy camera lens

A cheaper alternative to the Lensbaby is a toy camera lens for your DSLR. Holga lenses in common mounts such as Canon and Nikon cost around £20 (wexphotovideo.com). Diana lenses are pricier at about £39 (lomography.com).



Pinhole 'lens'

Why not try your hand at digital pinhole photography by replacing your normal lens with a pinhole body cap that acts as both lens and aperture? See Pinhole Solutions (www.pinholesolutions.co.uk).

This image of Staithes, North Yorkshire, has been creatively captured using a Lensbaby

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SCAN ME

Angela Nicholson
Photographer and journalist Angela Nicholson is a former technical editor for *Amateur Photographer* and has been reviewing and writing about photographic kit since 2004. She's tested everything from compacts to medium-format cameras and has spent a lot of time working out how to get the best from a wide variety of autofocus systems. Visit **www.squeezymedia.com**

The art of staying **focused**

Understanding how your AF system works and how to avoid pitfalls will really help you get sharp shots, says **Angela Nicholson**

There are a few creative exceptions, but one of the fundamental aims of most photographers is to get their subject sharp. Thankfully, that's the aim of a modern camera's autofocus (AF) system too but although they are sophisticated, they are not 100% foolproof. There isn't one go-to setting that guarantees every subject is tack-sharp in every situation. As a result, it's important to understand how your camera's AF system works, the conditions that challenge it, and the settings or techniques that will help you to get the results you want.

© BEN HALL

How does my camera's AF system work?

Today two types of autofocus systems are commonly used: phase detection and contrast detection. Digital SLRs use phase-detection focusing when the viewfinder is in use, but many (recent Canon DSLRs being a notable exception) switch to contrast detection in live-view mode.

Mirrorless cameras operate in full-time live-view mode and use either contrast detection or a hybrid AF system that combines contrast detection with phase detection. Even if they use contrast detection, it's usually much better than the contrast-detection system used by the average DSLR in live-view mode. The mechanics of phase detection are a little different depending upon whether it's used with a DSLR's reflex mirror or a mirrorless camera's sensor, but the principle is still the same. The light exiting the lens falls on to two pairs or groups of matched pixels. If the light intensity of the images from these pixels is the same, the subject is in focus. If there is a difference, the subject isn't in focus and the camera will then calculate which way to adjust the lens.

Contrast detection relies on the fact that a subject has the most contrast when it's in focus. It's an accurate method but it can't tell which way to adjust the lens so it may go one way, then the other. This means it's slower than phase detection. Mirrorless camera manufacturers have now honed this type of focusing so it's much faster than before. And developments like Panasonic's Depth From Defocus (DFD) technology helps cameras like the Panasonic Lumix G9 and GH5 get super-sharp shots of fast-moving subjects.

Using a large AF area makes it easier to track subjects that move erratically

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Learning how your camera's AF system works will enable you to capture sharp shots in challenging circumstances

Which AF mode should I use?

There are three main AF modes: single, continuous and auto. Single (S-AF or AF-S) mode is designed for use with motionless subjects. Once selected, the camera attempts to focus when the shutter release or AF-on button is pressed. Once the subject is sharp, it won't readjust focus until you release the button and press it again.

In continuous autofocus (C-AF or AF-C) mode the camera continues to focus for as long as the shutter release is held down. This makes it the default choice for shooting moving subjects. It also means that it's the wrong choice if you're planning to focus-and-recompose. I'd also steer clear of it with stationary subjects as it can 'fidget', which slows things down and can mean missing the focus.

Auto autofocus (AF-A or A-AF) mode is a useful choice when you don't quite know what you're going to photograph. With street photography, for example, you might shoot a static scene one minute and fast action the next. But if you know what you're shooting, it's best to use either S-AF or C-AF because the camera needs to make some decisions in A-AF mode and it sometimes gets things wrong or causes delay.

Auto AF is useful for subjects like this flower which was intermittently buffeted by the wind

What has artificial intelligence (AI) got to do with autofocus?

Face- and eye-detection AF have been around for a little while, and they are useful for social photography. Eye AF is especially helpful because it gets the most important part of the subject razor sharp, leaving you to focus on aspects such as the composition and timing of your shots. An issue with some face-detection systems is that they incorrectly 'see' faces where there aren't any, which leads to focusing errors. For this reason, it's a good idea to turn the feature off when you're not going to use it.

Thanks to increased use of artificial intelligence and greater processing power it seems likely that we'll see more subjects being detected automatically in the near future. Sony has extended its Eye AF system to cover animals' eyes, or at least cats' and dogs' eyes, and Olympus's OM-D E-M1X can detect cars, trains and aeroplanes, while Panasonic's Lumix S1 and S1R can detect animals. They all work well, making it easier to get those subjects' sharp.

Even though modern AF systems are incredibly smart, there are occasions when it's better, or perhaps easier, to focus manually. Cameras usually search the distance for their target, which means that it can be quicker to focus manually on a macro subject, for example. And if you're shooting through something like water spray from a fountain, or foliage, the AF system is likely to get very distracted, thus making manual focusing a better choice here too.

If you're using a DSLR, don't struggle with the tiny viewfinder image while you focus. Instead, activate live view so that you can magnify the focus point and use focus peaking to get the subject completely sharp.

Eye AF can help you nail the focusing with a wide range of people shots

A small AF point gives you precise control over the focus

Never use auto-AF point mode: true or false?

Most cameras offer a collection of AF-point selection modes that help you to choose the point(s) you want to use. These include options such as single-point, multiple-point, all-point or auto-point, zone and tracking. The smaller the selection area, the more precise you can be with the focusing. However, if your subject is moving, it's worth selecting multiple-point mode or zone mode.

In the past I would have avoided using an all-point or auto-AF point mode that puts the camera in full control over which AF point is used, but Sony's recent AF systems have changed that. Its Wide and Zone Focus Area modes work brilliantly and in continuous autofocus (AF-C) mode in models like the A6400 and Alpha 7 III, they're great for tracking a moving subject. But it's worth noting that they usually target the nearest part of the subject and if it stops moving, it's prone to focusing just in front of it.

Sony's Lock-on AF and Real-Time Tracking modes work in a similar way to other manufacturers' tracking modes, but are better than most. Place the point over the subject, and then press the shutter release to activate the focusing. Once you start shooting, the camera is in control over where the AF point goes. It usually follows the subject, but if it strays you have to stop shooting to reposition it.

Most tracking AF modes aren't as fast or accurate as Sony's, but can be useful with slower or motionless subjects. For example, you can place the starting AF point over a critical part of a subject and it should stay with it as you recompose.

© MICHAEL TOPHAM

If shooting a portrait wide open with an 85mm lens it's best to select an AF point rather than focus and recompose

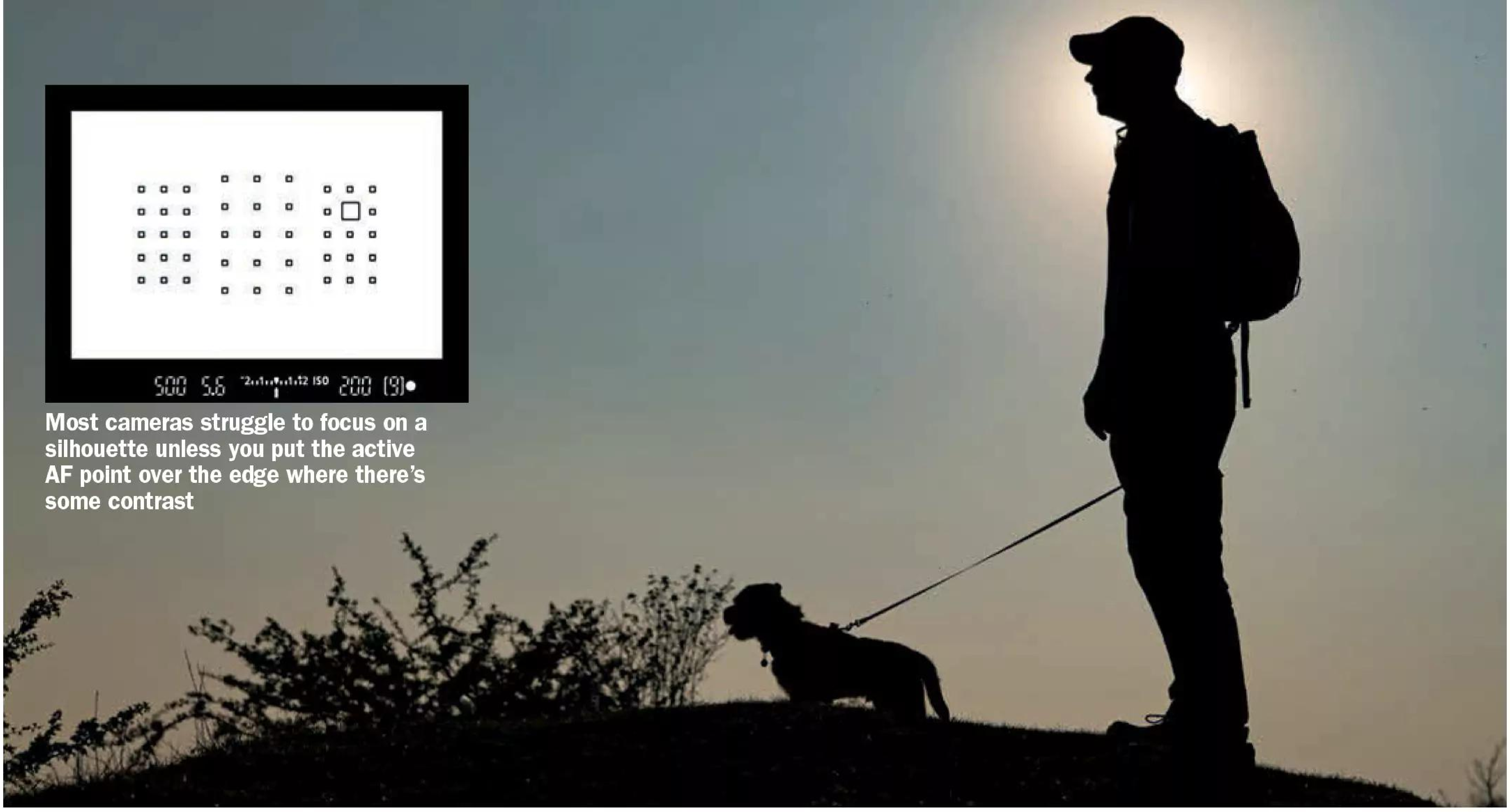
Is it OK to focus and recompose?

When cameras had one AF point we often had to focus and recompose the shot before taking the image. However, simple trigonometry tells us that this can lead to focusing errors. If you're shooting a portrait with an 85mm f/1.4 lens wide open, for example, the depth of field is so shallow that using the central point to focus on the eye and then recomposing can mean the eyebrow or nose is sharper than the pupil. So it's better to compose the shot and use the AF point that's closest to the object you want to be sharpest.

Why use the back button?

It's important to time your shots carefully. Back-button focusing can help with this by taking away the shutter release's AF activation duty. Instead, use the AF-on button on the back of the camera (or via a customised button) to control the AF system, and only press the shutter release when you want to take a shot.

This is useful when capturing action. With motorsports, for example, you might want a car to appear at the apex of a bend. You can set the focus with the AF-on button and it won't shift when you press the shutter release to take the shot.



Most cameras struggle to focus on a silhouette unless you put the active AF point over the edge where there's some contrast

My AF system is struggling to lock on – what should I do?

Focusing systems need light and contrast to work. It's the lack of contrast that can leave a camera struggling to focus on a well-lit sheet of paper or a smooth wall. If you can find some point of contrast, even if it's just a join in the wallpaper, it will often snap into focus quickly.

Because the phase-detection sensors in a DSLR are often arranged in lines, the detail needs to cross a line rather than run along it for it to be 'visible' to the AF system. Consequently, it's a good idea to understand your camera's AF sensor arrangement. It's also why cross-type AF points are useful – they can detect details in more than one direction.

If your camera is struggling to focus, look for an area of contrast or consider switching to the central AF point. As well as being cross-type, this is usually the most sensitive in a DSLR. Cameras sometimes have multiple cross-type AF points and it's worth knowing where these are, especially when shooting action in low light.

Knowing how your subject moves can help you decide on the ideal AF customisation settings

Is it worth customising my AF system?

Some cameras have a series of customisation settings for the AF system. These affect aspects such as how the AF responds to a change in the subject distance or if the subject moves from the selected AF point.

Many photographers assume that it's best to set the camera to react quickly to any change, but a little pause can be a good thing. For example, if you're photographing a swimmer doing the breaststroke towards you, with a fast setting the camera will refocus on the far end of the pool every time they bob underwater. Then when they reappear it will refocus again, making a major adjustment. A slower reaction will help the camera stay on the subject.

To get the best from these customisation systems you need to consider what you're photographing as well as the shooting conditions – for example, whether any objects are likely to come between you and the subject.

AF mysteries explained

1 What is the focus limiter switch for?

If your subject is going to be within a specific range it can be helpful to use the lens focus limiter to prevent it from hunting across the entire focus range.

2 What is focus stacking?

This technique involves shooting a series of images, each with a slightly different focus distance. The images are then composited into one that has much greater depth of field than an individual shot. It's a very popular technique with macro photographers.

3 Why does AF depend on the lens I am using?

Different lenses have different motors that drive the focusing and different weight elements. Also, lenses with a wider maximum aperture let in more light, which helps the AF system.

4 Why are full-frame DSLRs' AF points near the centre?

Vignetting as well as the main and secondary mirror arrangement of a DSLR mean that the AF sensor is smaller than the imaging sensor. As a result, the AF points are central.

5 Can f/5.6-sensitive AF points be used at smaller apertures?

Yes. The focusing occurs with the aperture wide open, so use a lens with a maximum aperture of f/5.6 or greater and it will work.

DOES A NEW LENS NEED TO BE CALIBRATED?

While it's much less of an issue with mirrorless models, manufacturing tolerances can result in a DSLR's AF sensor and a lens not being perfectly matched, which means your subject isn't as sharp as you might expect. Thankfully, high-end cameras have a lens calibration or AF Microadjustment feature that allows you to correct this problem. These steps show how the AF Microadjustment feature works using a Canon EOS 5D Mark IV and a calibration target created from a free template downloaded at www.squit.co.uk/photo/files/FocusChart.pdf

1 Set up your target

Assemble your calibration target and mount your camera on a tripod at least 25x the focal length of the lens away. Next, select mirror lock-up mode.

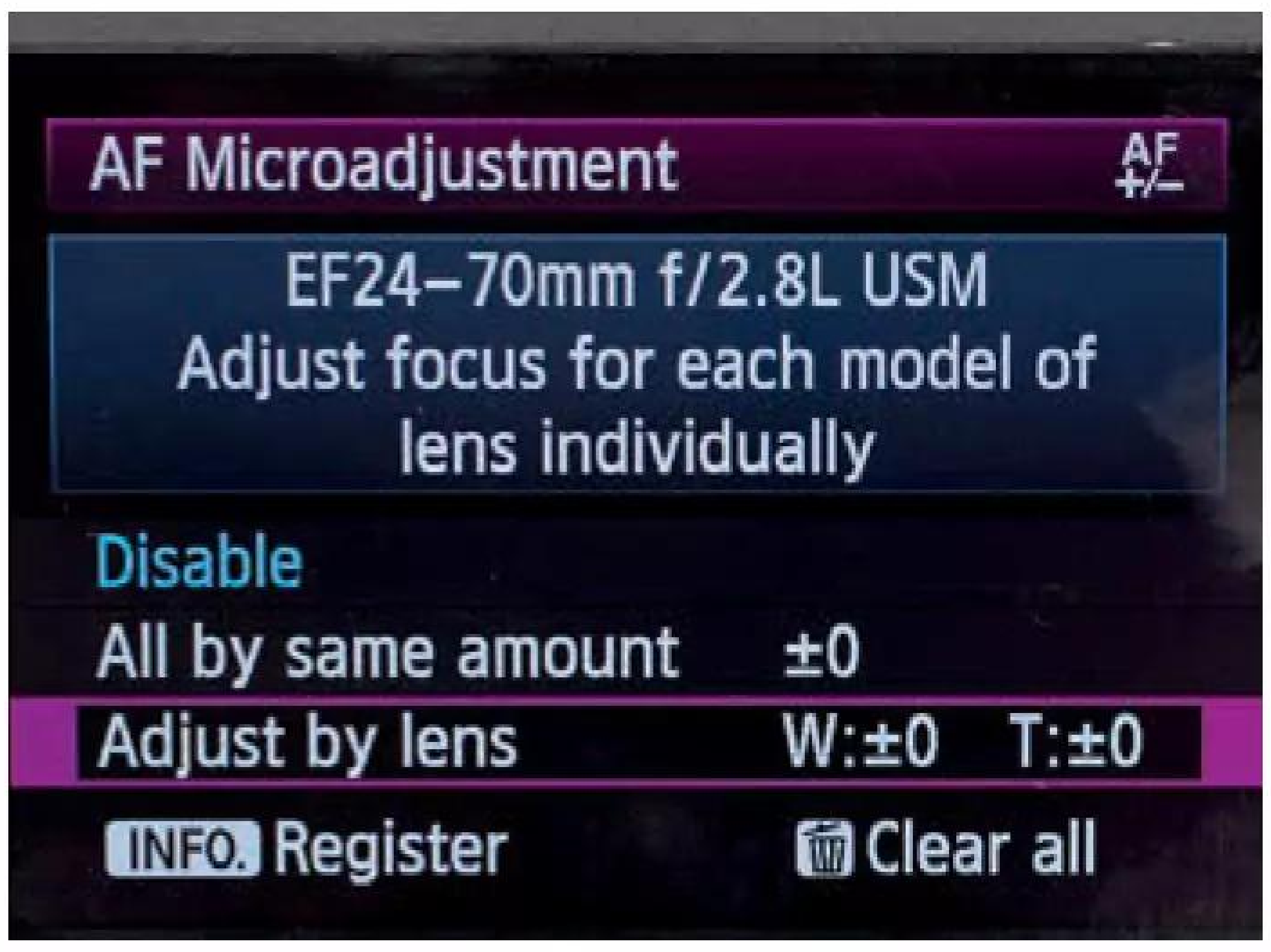
WB AF·DRIVE ISO·
2.8(12 13)
ONE SHOT
AF-ON
START/STOP

2 Use the widest aperture

Set the widest aperture and put the centre AF point over the chart focus marker before focusing and taking a shot. Refocus again and repeat until you have five images.

3 Review the images

Open the images on your computer and examine them at 100% on screen to see whether the camera is focusing the lens in front of or behind the intended target.



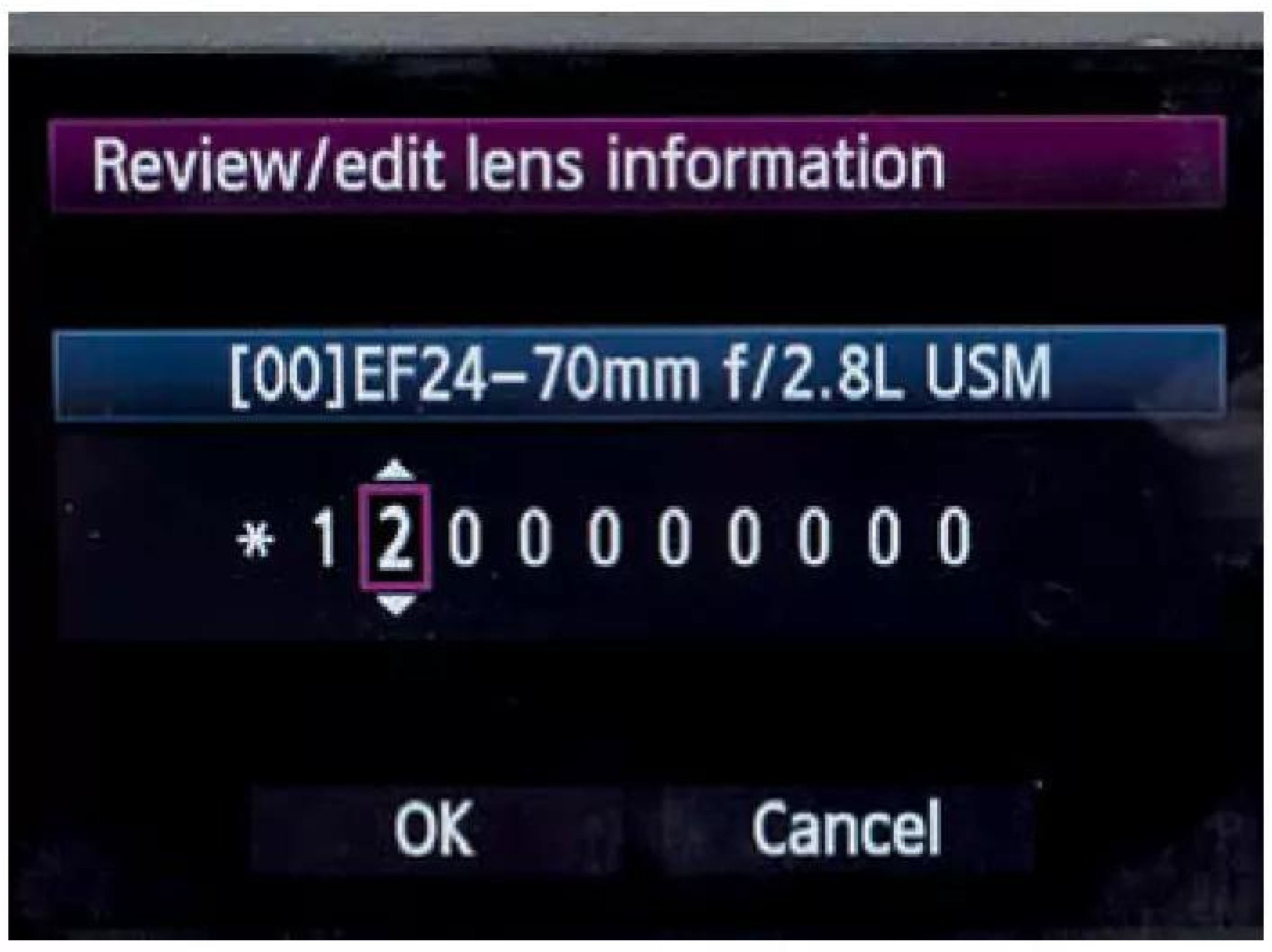
AF Microadjustment

EF24–70mm f/2.8L USM
Adjust focus for each model of lens individually

Disable
All by same amount ±0
Adjust by lens W:±0 T:±0
INFO. Register
Clear all

4 Find AF Microadjustment

From the menu, select AF Microadjustment in the AF options. Press Set and scroll down to 'Adjust by lens' before pressing the Info button to access the options.



Review/edit lens information

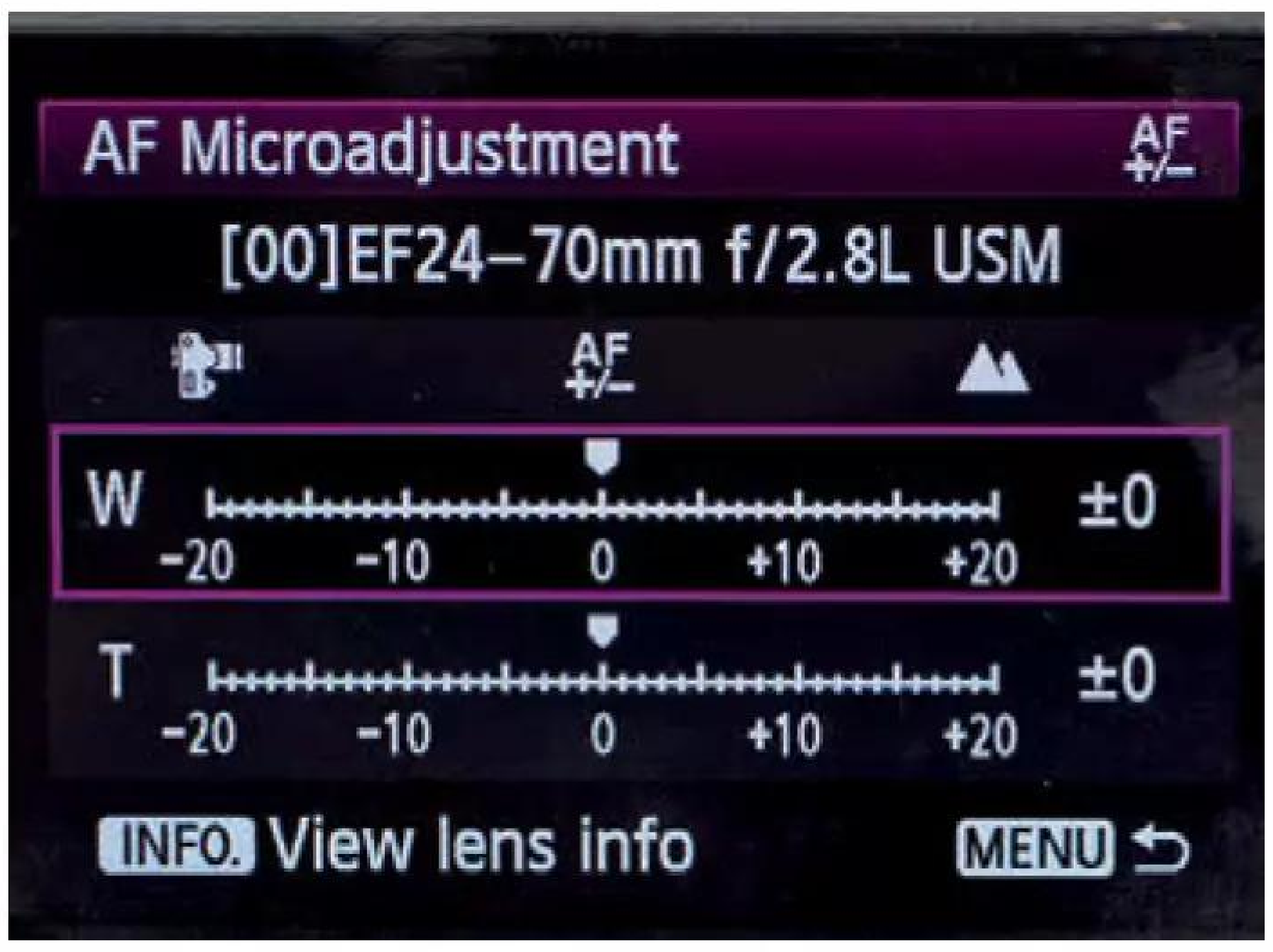
[00]EF24–70mm f/2.8L USM

* 1 2 0 0 0 0 0 0 0 0

OK Cancel

5 Check lens serial number

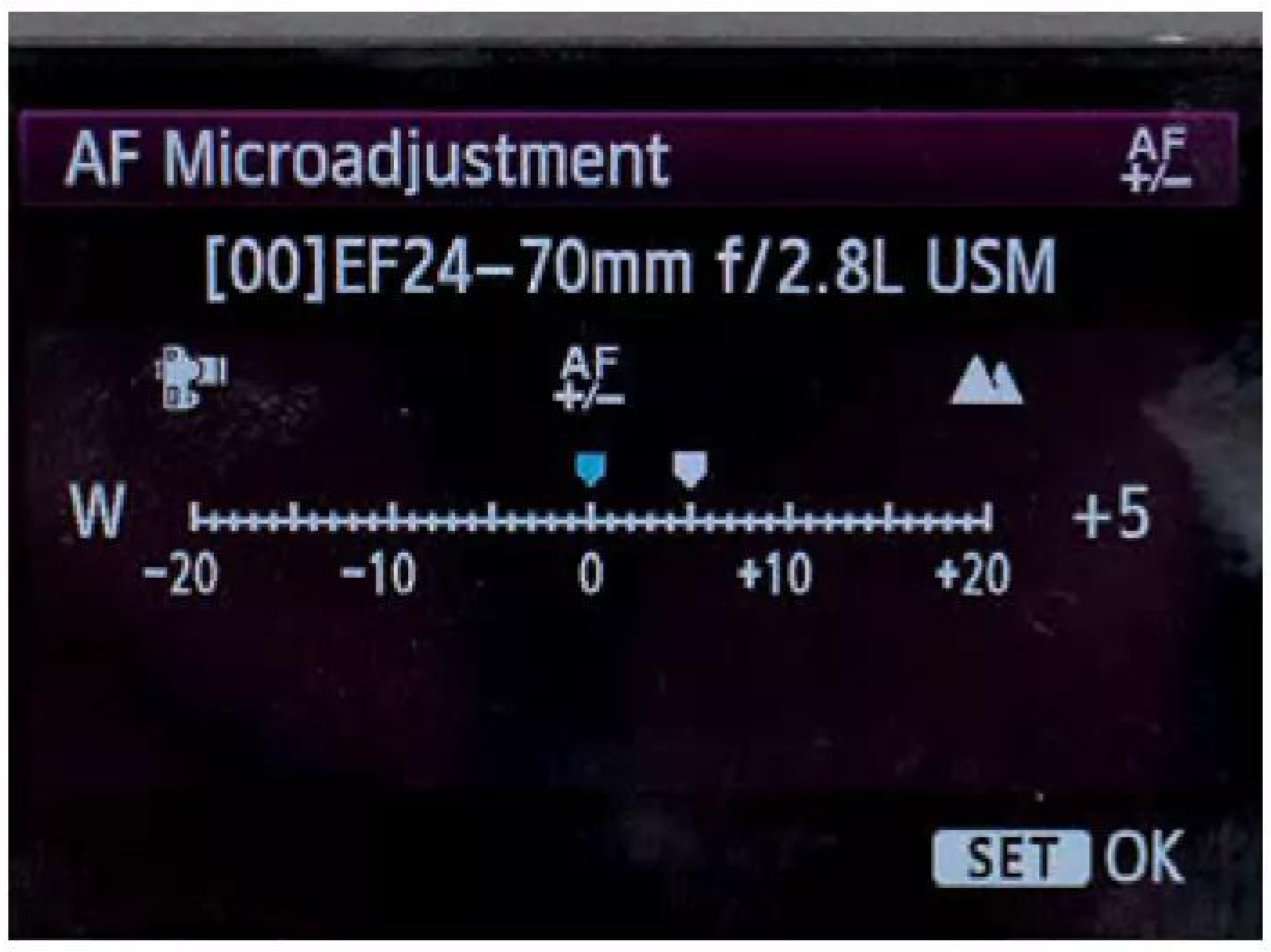
Press the Info button again to check the lens serial number. If necessary, use the Set button and main dial to enter the correct number, then select 'OK'.



AF Microadjustment
[00]EF24–70mm f/2.8L USM
W ±0
T ±0
INFO. View lens info
MENU

6 Adjust focus point

You can adjust the focus point of the shortest and longest focal lengths. Use the scroll dial to select the focal length that you want to adjust, and then press Set.



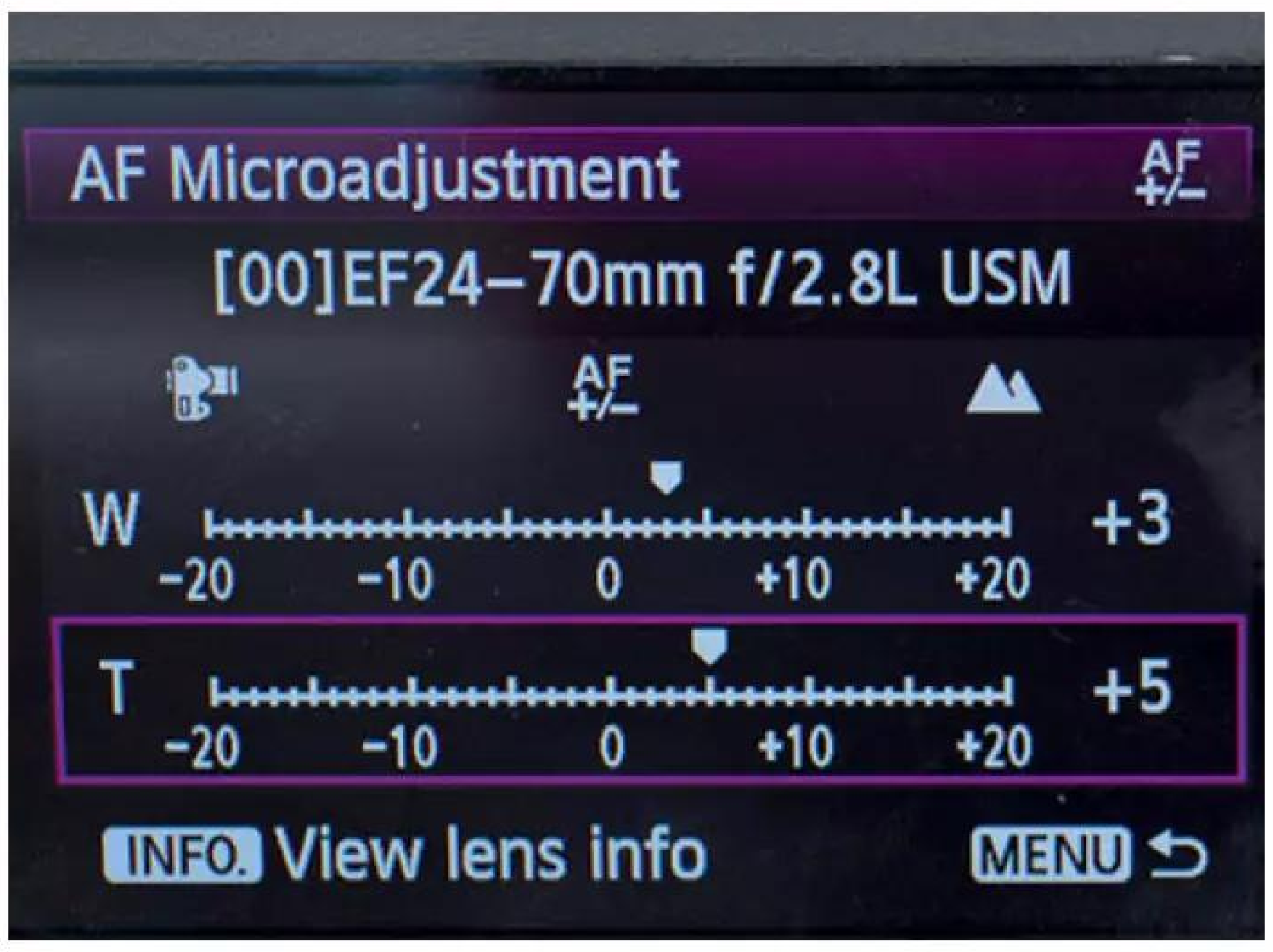
AF Microadjustment
[00]EF24–70mm f/2.8L USM
W +5
SET OK

7 Set focus adjustment

Use the main dial to set the focus adjustment; use a positive number to correct front focusing and a negative one for back focusing. Press Set followed by the Menu button.

8 Refine the calibration

Shoot the target again and examine the images to assess the impact of the adjustment. If necessary (it probably will be) repeat the adjustment process to refine the calibration.



AF Microadjustment
[00]EF24–70mm f/2.8L USM
W +3
T +5
INFO. View lens info
MENU

9 Repeat for other lenses

If you're calibrating a zoom lens, repeat the adjustment process for the longest focal length once you've got the focusing right for the shortest focal length.

Accurate focusing is essential when shooting at wide apertures
Nikon D700, 50mm, 1/1000sec at f/4, ISO 200

© NIGEL ATHERTON

Stay sharp ha

Tripods ensure sharp shots but can slow you down and make spontaneous shots harder. **James Abbott** shows how to keep everything sharp handheld

For candid portraits, shoot handheld for maximum flexibility

KIT LIST

Nikon
AF-S NIKKOR 50mm 1:1.4G

◀ Prime lens

Everyone needs a nifty fifty, not least because the wide aperture helps to keep ISO settings down in low light.

◀ Mini tripod

Pocket-sized mini tripods are a great way to add stability without the weight and bulk of a full-size tripod. [Such as the 3LT Iggy or Manfrotto PIXI]

ndheld

ALL PICTURES © JAMES ABBOTT, UNLESS OTHERWISE STATED

James Abbott

James is a landscape and portrait photographer and a freelance photography journalist and editor specialising in photography techniques, tutorials and reviews. See more of his work at **www.jamesaphoto.co.uk.**

Shooting handheld is all about speed, convenience, spontaneity and, in some cases, to be less conspicuous. The ability to react quickly should never be underestimated and is essential for some genres of photography including sports, portraiture, street, some wildlife, wedding photography and many more. Basically, in these situations if your camera is fixed to a tripod you'll be hugely restricted – a fleeting moment is lost forever.

The similarity here is that for standard shots of these subjects you'd generally use a shutter speed that's fast enough to freeze movement, unless you're panning a fast-moving subject or adding blur in-camera for creative effect. But even when freezing movement, it's quite common to use the slowest shutter speed you can get away with to try to keep ISO as low as possible for optimum image quality, and this is the source of many challenges alongside autofocus and the ability to change settings subconsciously on the fly.

The human tripod

Everyone wants to take the sharpest shots possible unless you're using a technique such as intentional camera movement. And with the correct settings and techniques, you can push your lenses to their limit and achieve sharpness in any situation. Correct stance, hold and breathing are fundamental to taking sharp images. If you're shooting at the slowest shutter speed you can get away with, with or without image stabilisation, you need to keep the camera and lens as steady as possible. To do this stand with your feet shoulder-width apart and tuck your elbows into the front of your body. Breathe normally, but release the shutter immediately after exhaling. When using a telephoto lens with a tripod collar, ensure the tripod mount is rotated to the top of the lens. This will allow you to comfortably hold the bottom of the lens to keep it stable.

◀ **Monopod**
Combine a monopod with image stabilisation and you can shoot at shutter speeds as slow as 1sec.

SteadePod
LOCKED
ADJUST/RETRACT
EXTEND

◀ **SteadePod**
While not as effective as a monopod, this pocket-sized contraption will help you remain steady at standing height.

Shooting in bursts

It's often said that less is more, but when it comes to shooting at the extremes of settings such as aperture and shutter speed, more means more chance of a pin-sharp image. Never be afraid of shooting more images than you might normally to increase the chances of one of those images being sharp exactly where you want it to be.

Shooting in continuous burst mode has a reputation for only being used for action photography where you can take a series of shots and pick out the one that looks best. When you're shooting with a wide aperture or slow shutter speed that's borderline too slow, set your camera to continuous burst mode. Shooting in a burst of, say, three shots gives you a much greater chance of one being sharp and in focus.

The sweet spot

The sharpness of lenses comes down to many factors, and quality of the lens and cost sits at the top of that list. But regardless of whether you're shooting with a top-of-the-range pro option or the budget kit lens that came with your camera, all lenses share something in common, they all have a 'sweet spot'.

The sweet spot is simply the point at which the lens is able to produce the sharpest image possible. Not to be confused with depth of field, this is sharpest in the focus area of any given lens and in most cases is a middle aperture of f/8 or f/11. Some lenses, such as the 85mm f/1.8, are often optimised for shooting at wide apertures, and with solid focusing technique can produce unbelievably sharp results even at wide apertures, although the sweet spot remains a middle aperture.

How high can you really go?

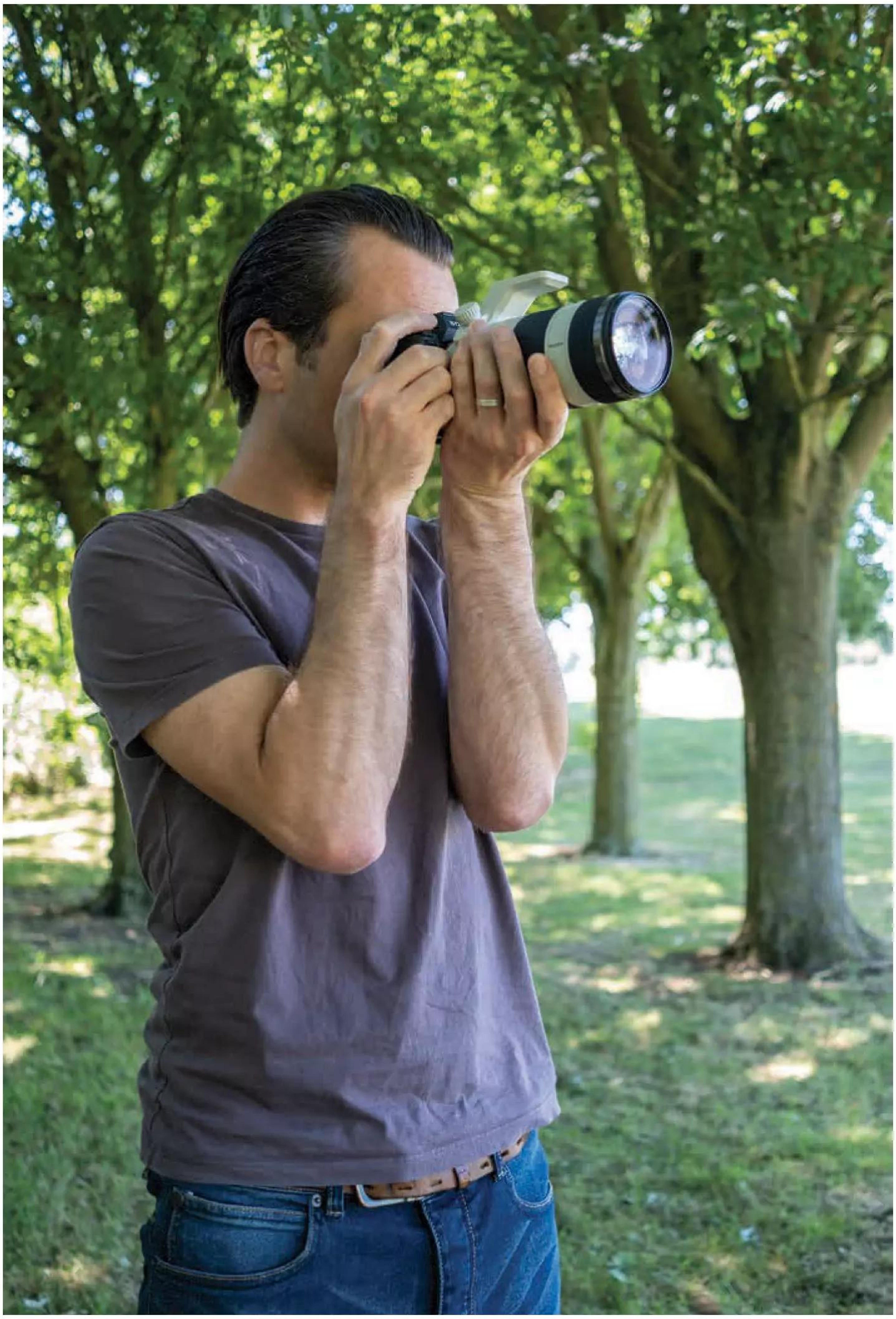
It's always best to shoot at the lowest ISO setting possible to keep noise to a minimum, but there will be times when you have to crank up the ISO to achieve either a shutter speed fast enough to support handholding, or one fast enough to freeze a moving subject.

Modern cameras are impressive performers when it comes to high ISO, and you can shoot relatively clean images up to ISO 1600. Generally, up to ISO 3200 can still look fairly clean when processed well, and in extreme situations ISO 6400 is usable, but noise is more problematic. Still, a sharp shot with a bit of noise is always better than a blurry image with no noise. Note that the higher you go with ISO, the more the noise cuts into sharp subject edges and makes them appear less sharp.

OPTIMUM SHARPNESS IS ONLY A STEP AWAY

Ask most professionals whether you should upgrade your camera to the latest model or whether you should buy new lenses, and many will tell you to invest in the best glass possible because that will improve the quality of your images more than a new camera with a slightly better sensor.

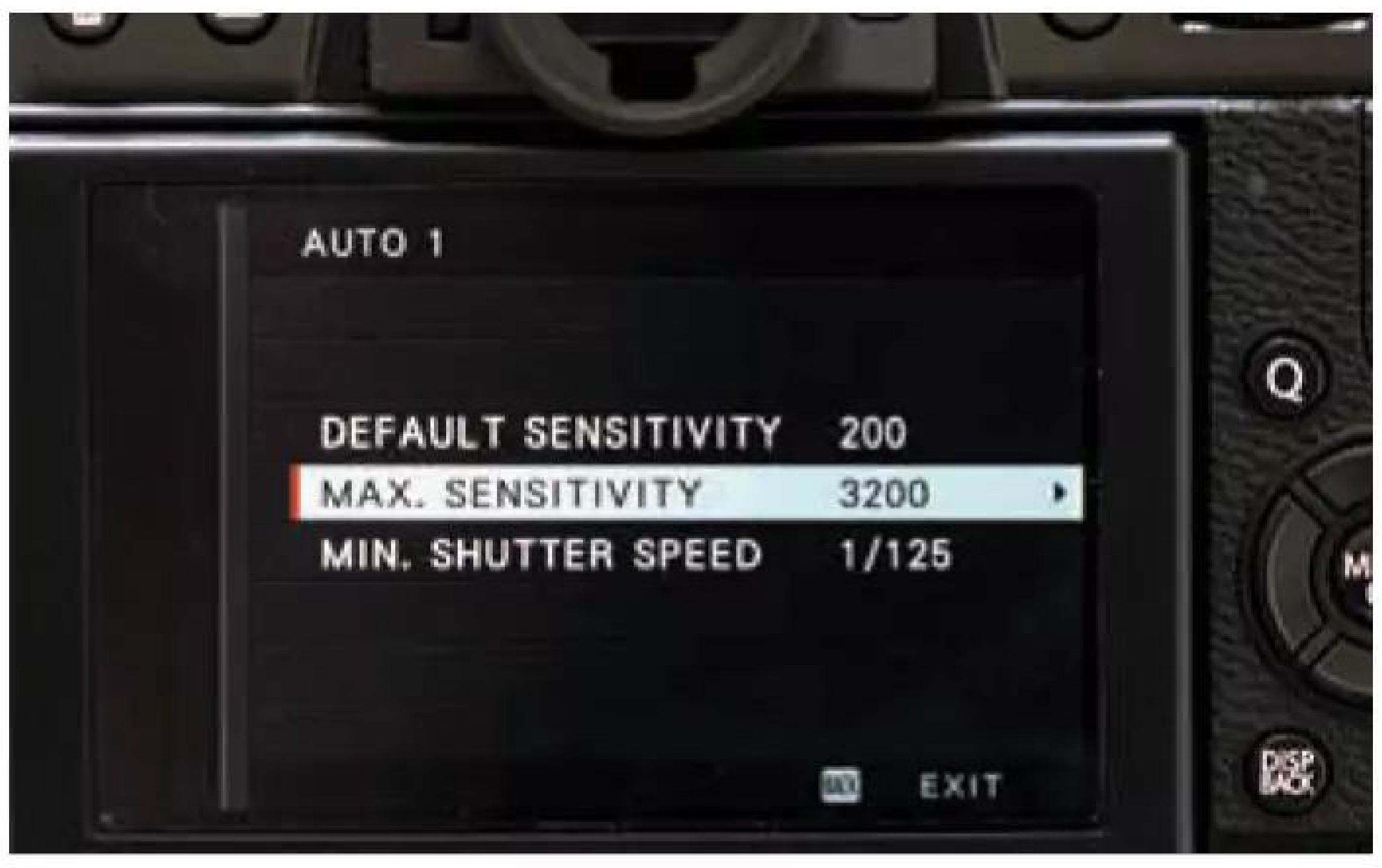
Lenses are unbelievably important because they're the element of gear that creates the image on the camera sensor, so having the best lenses available for shooting your favourite subjects will always give you a head start. There comes a time in every photographer's life where you want to take your images to the next level, but you're not quite sure how to go about it. Most of the time, it all comes down to just a few simple changes to your technique here and there, and you'll see dramatic improvements in your photography. So here are seven tips that will help you to get the most from your lenses, and ultimately take sharper shots.



The correct posture, the way you hold the camera, and breathing all contribute to stability

1 Focusing macro handheld

Focusing is either pressing the shutter button to initiate autofocus, or manually turning the focus ring on the lens. While both of these are true for macro photography there's also another way – the rocking technique. When shooting at a 1:1 ratio the lens will be manually set to its minimum focusing distance, so to focus gently move the camera backwards and forwards to bring the subject into focus – a bit like using a focusing plate with a tripod.



AUTO 1

DEFAULT SENSITIVITY 200
MAX. SENSITIVITY 3200
MIN. SHUTTER SPEED 1/125

2 Auto ISO for sharper shots

An essential setting for shooting handheld, auto ISO is a great way to ensure shutter speed is fast enough to avoid camera shake, even if you're moving between indoors and outdoors. Using auto ISO the camera selects the most appropriate setting within a range set by you. All you have to do is set the ideal or lowest setting; the highest you'd like it to go to, for example, ISO 3200; and the minimum shutter speed that should be set.

FOCUS ASSIST
Q
MENU OK
DISP BACK
MADE IN JAPAN

3 Successful AF in all situations

Using a single AF point offers the best blend of convenience and control. For a static subject set the AF mode to single shot: once the shutter button is depressed halfway, focus will lock onto the subject behind the active focus point and remain locked until released. For moving subjects, use continuous AF – the camera will focus on a moving subject while the shutter button is depressed halfway.

Nikon
AF-S NIKKOR 50mm 1:1.4G

4 Fast prime lenses for low light

When shooting street or portrait photography in low light, or indeed in any light, fast prime lenses are the perfect way to keep ISO settings as low as possible. When shooting in low light, the ability to shoot at f/1.8 rather than the kit lens average of f/5.6 when set to 50mm is a difference of two stops. In practical terms, that's the difference between shooting at ISO 1600 rather than ISO 6400.

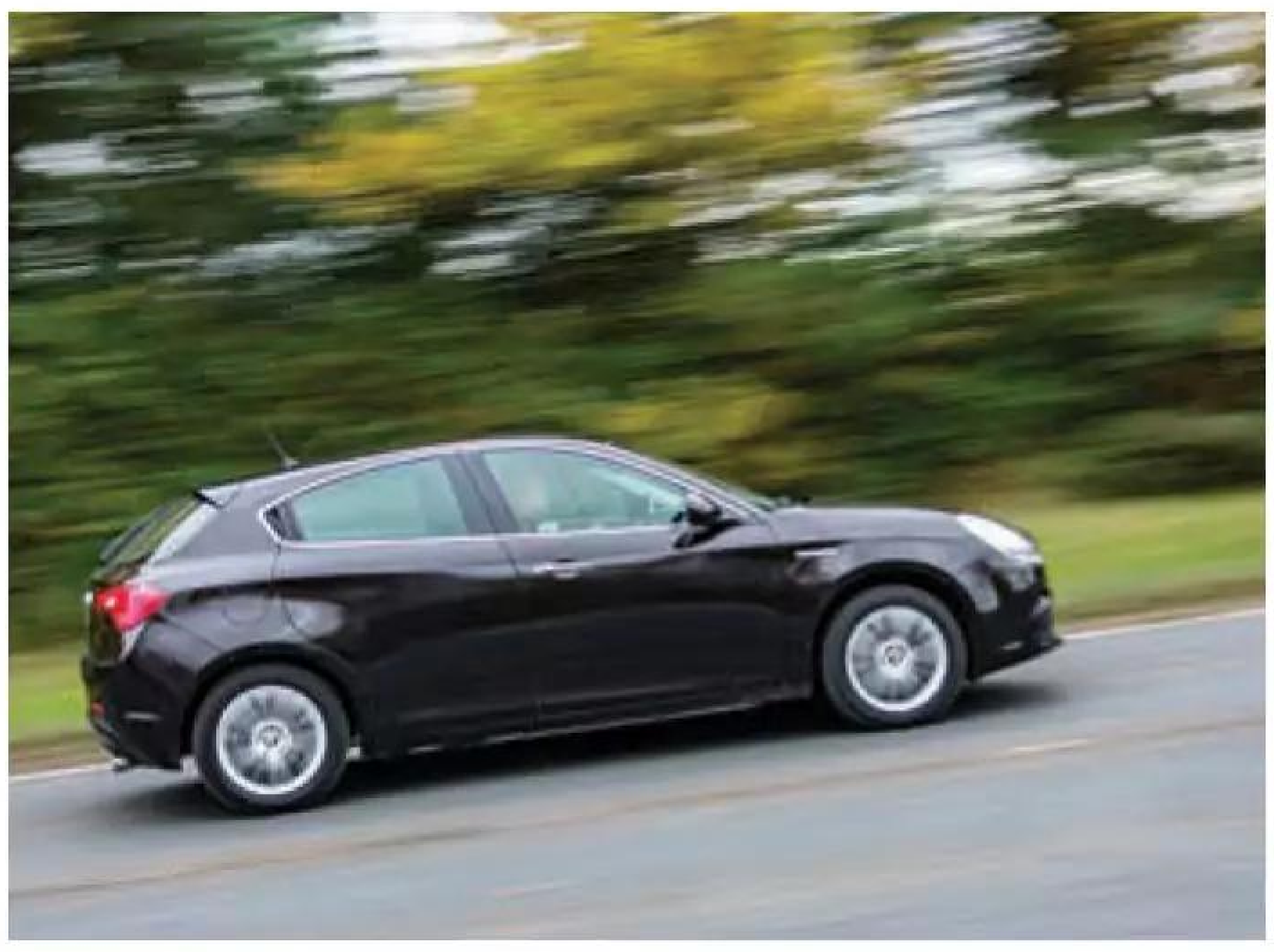
5 Image stabilisation

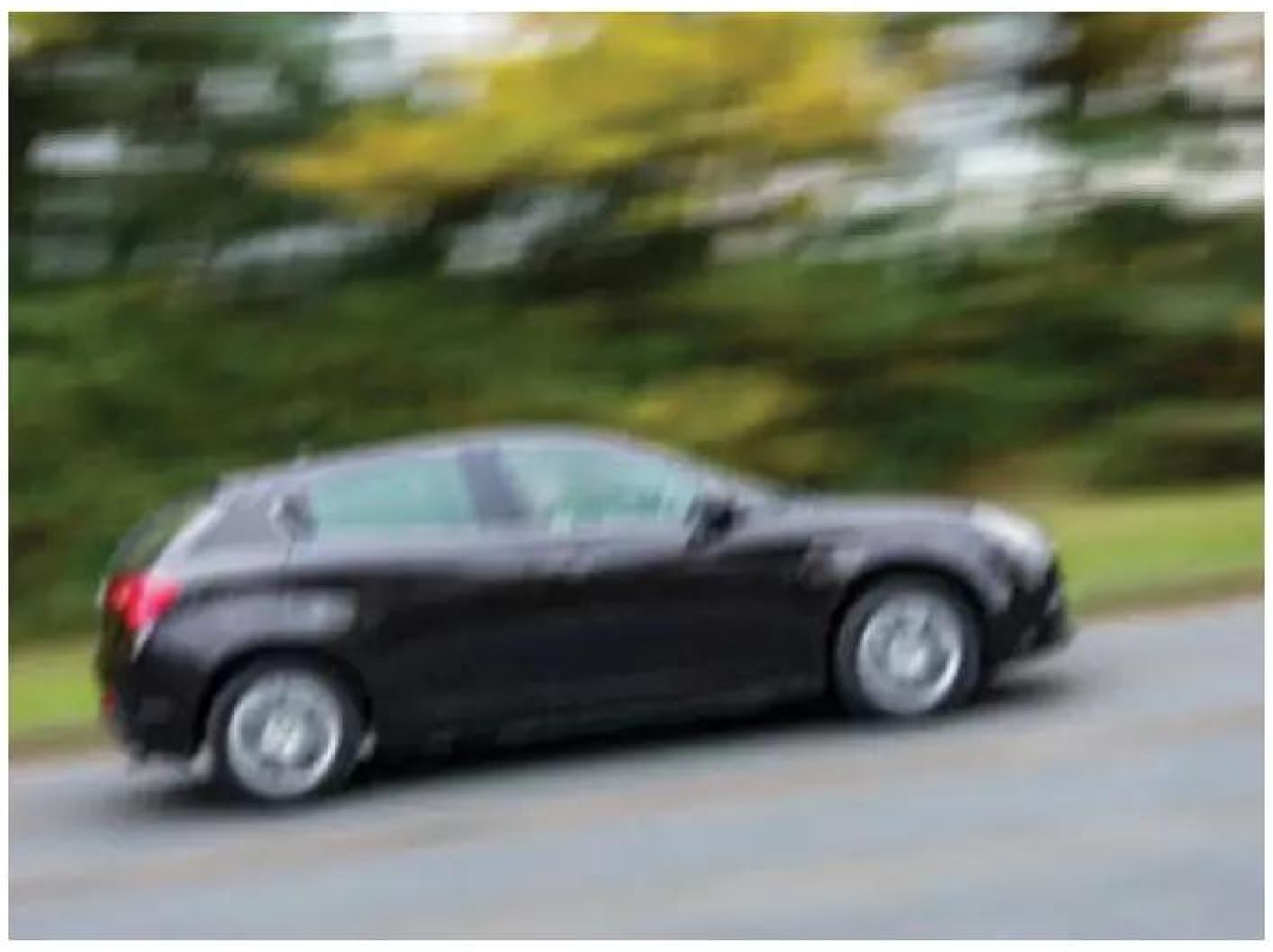
Image stabilisation lets you shoot at slower shutter speeds than you would normally be able to without it. If your lens offers it, type 1 is for general subjects and type 2 is for panning. Lenses with just an on/off switch only have type 1. When shooting with your camera on a tripod it's imperative that you switch off image stabilisation. If left on, the IS detects its own tiny movements, even though the camera is completely still, and moves even more to compensate which results in blurring.

4000
2000
1000
500
250
180X
125
60
30
15
8
4
2
1
B
A
ON OFF

6 The focal length/shutter speed rule

You've probably heard of this rule of thumb, but it does provide a good starting point for shutter speed and lenses. It's said that the shutter speed you shoot with should match or exceed the focal length of your lens to avoid camera shake. So, if you're shooting at 50mm you'd need 1/60sec minimum, and at 200mm you'd need 1/250sec minimum. It's a crude rule but works well as a guide when you're shooting with or without image stabilisation.





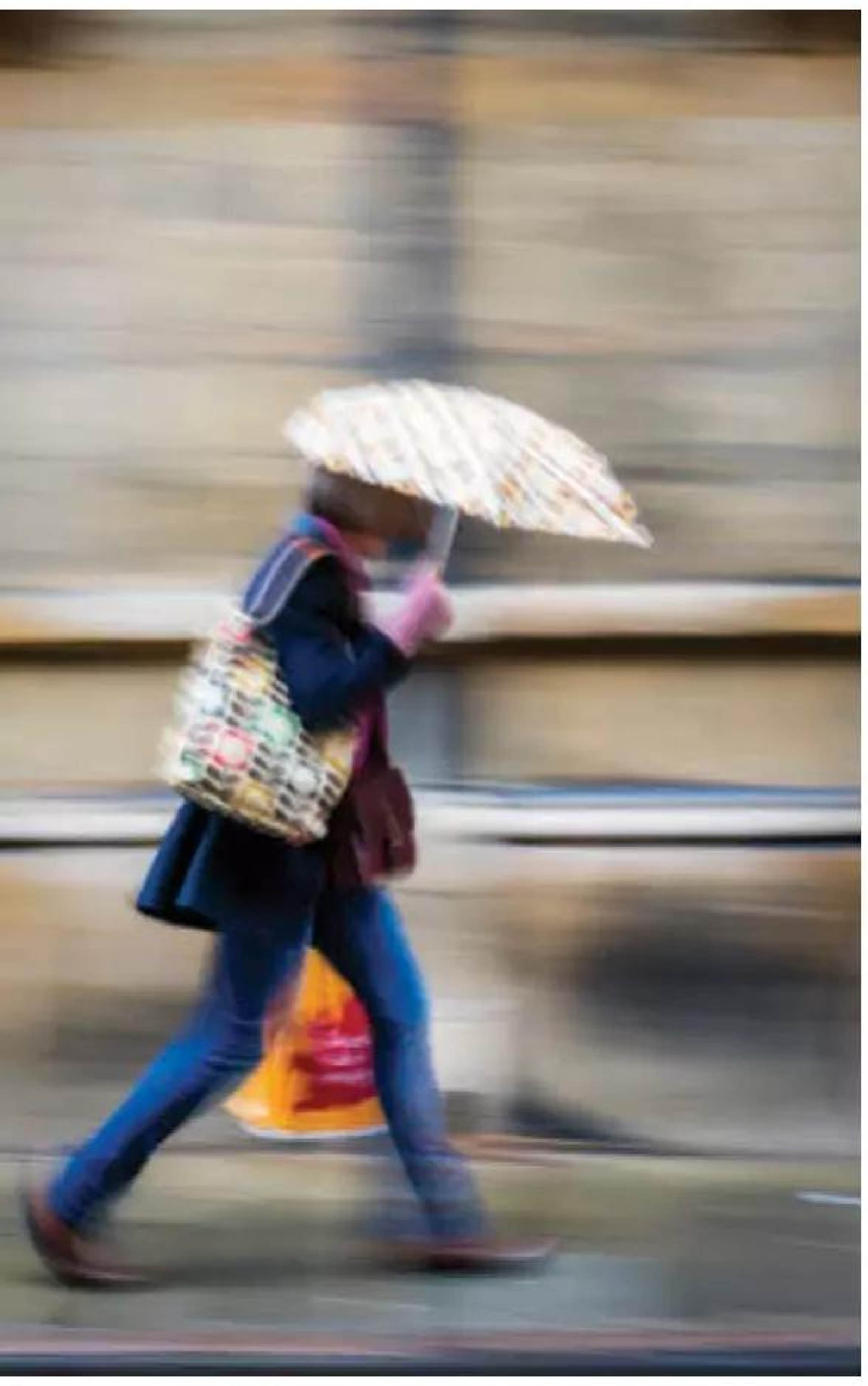
7 Panning fast-moving subjects

Panning is a great way to add dynamism to action shots. Hold your camera and stand in the way we suggest on page 81 and set the AF mode to continuous. Use shutter priority and set an appropriate speed for the subject. Next, track the subject with the active AF point as it passes you with the shutter button depressed halfway. Release the shutter and continue to smoothly track the subject. In this panned shot (far left) the subject is sharp; the other is not.

Subjects that are best shot handheld

Street and reportage

When you're out shooting on the street the last thing you want to do is draw attention to yourself when taking clandestine photos of strangers. Not only would a tripod be too static, it would also stick out like a sore thumb. One trick some street photographers use is to have their camera on a strap around their neck and shoot blind, while others quickly raise the camera to their eye to compose and shoot in one smooth, split-second motion. If, when using this technique you do get 'caught' by the person, looking thoughtfully beyond or above them and taking another shot will, most often, make them think you're actually focused on something else.



The use of image stabilisation was essential for this street panning shot 1/8sec at f/11, ISO 800

Portraiture

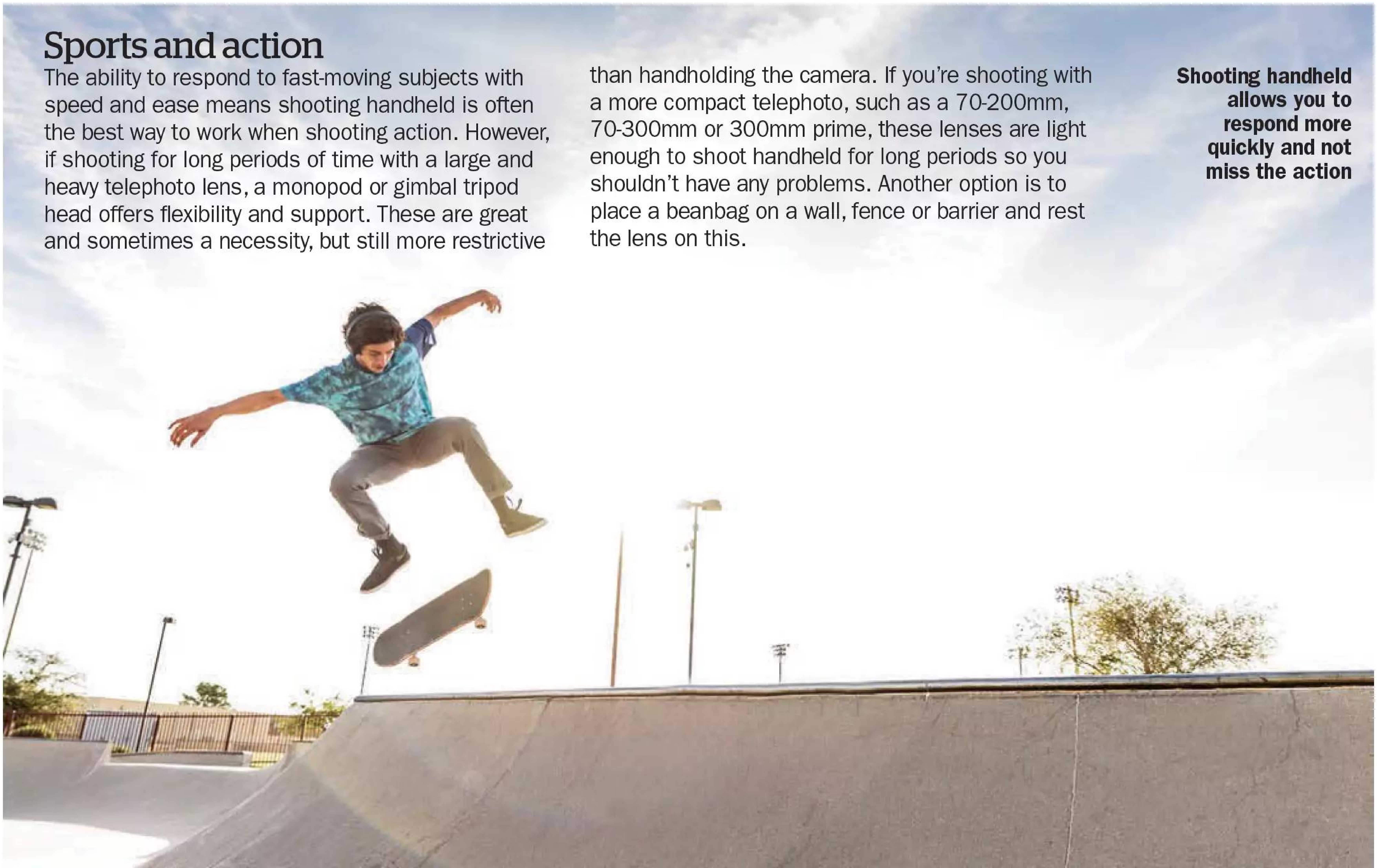
When you're shooting portraits, the subject may not be moving around a great deal, but having your camera attached to a tripod will slow down and restrict your shooting. It's always better to shoot handheld because this will allow you to move forwards, backwards and to the sides to create new compositions and crops, as well as allow you to shoot with the camera at different angles.

If you're worried about shots being level, most cameras have some kind of virtual horizon that's visible in the viewfinder. DSLRs often use the exposure scale at the bottom, while mirrorless cameras are able to display a full virtual horizon in their EVF.

Frame and compose portraits with speed and ease handheld

Sports and action

The ability to respond to fast-moving subjects with speed and ease means shooting handheld is often the best way to work when shooting action. However, if shooting for long periods of time with a large and heavy telephoto lens, a monopod or gimbal tripod head offers flexibility and support. These are great and sometimes a necessity, but still more restrictive than handholding the camera. If you're shooting with a more compact telephoto, such as a 70-200mm, 70-300mm or 300mm prime, these lenses are light enough to shoot handheld for long periods so you shouldn't have any problems. Another option is to place a beanbag on a wall, fence or barrier and rest the lens on this.



Shooting handheld allows you to respond more quickly and not miss the action

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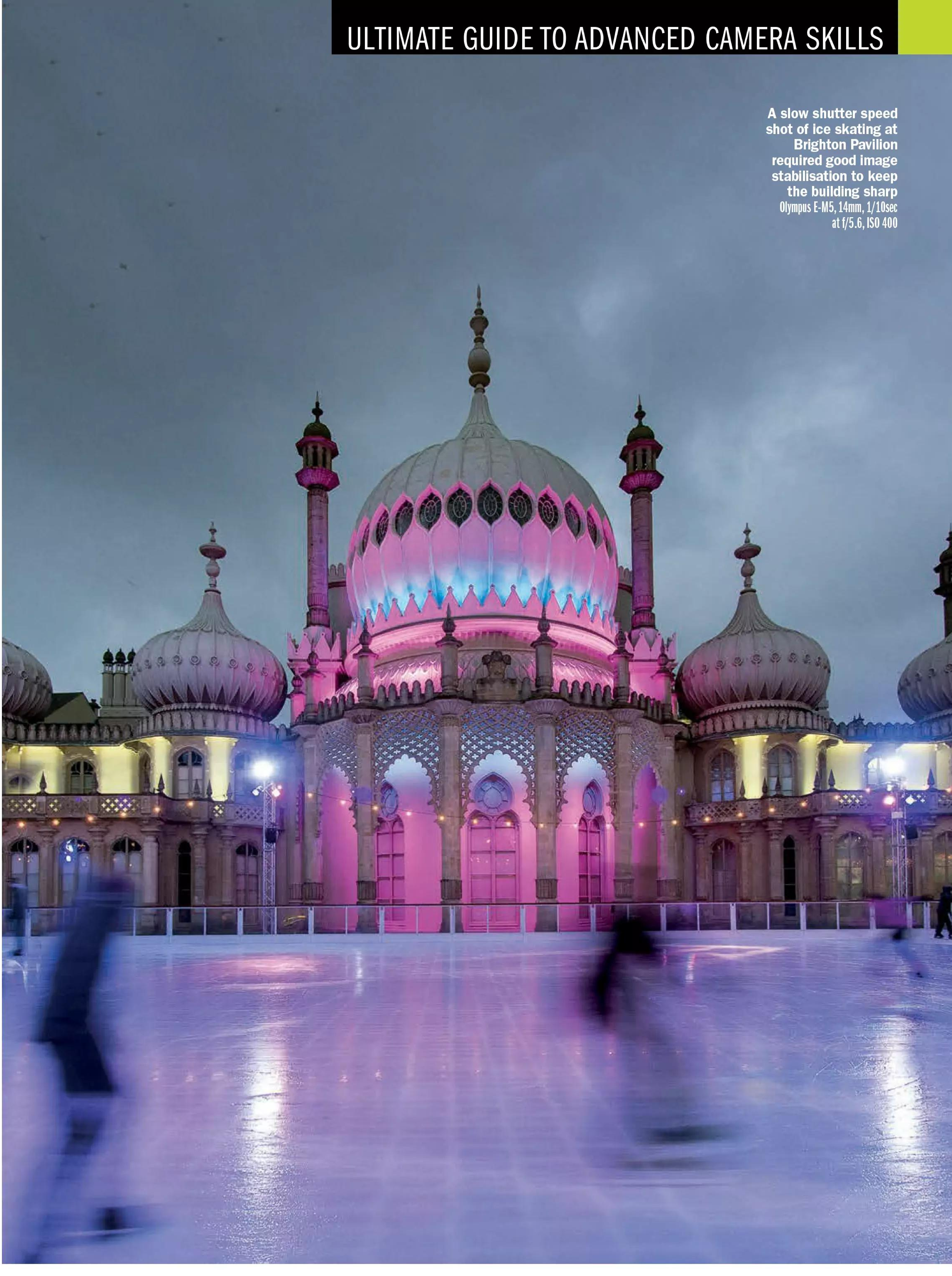


A slow shutter speed shot of ice skating at Brighton Pavilion required good image stabilisation to keep the building sharp
Olympus E-M5, 14mm, 1/10sec at f/5.6, ISO 400

© NIGEL ATHERTON

Keeping it steady

Andy Westlake explains everything you need to know about image stabilisation and how to get the best results from your camera

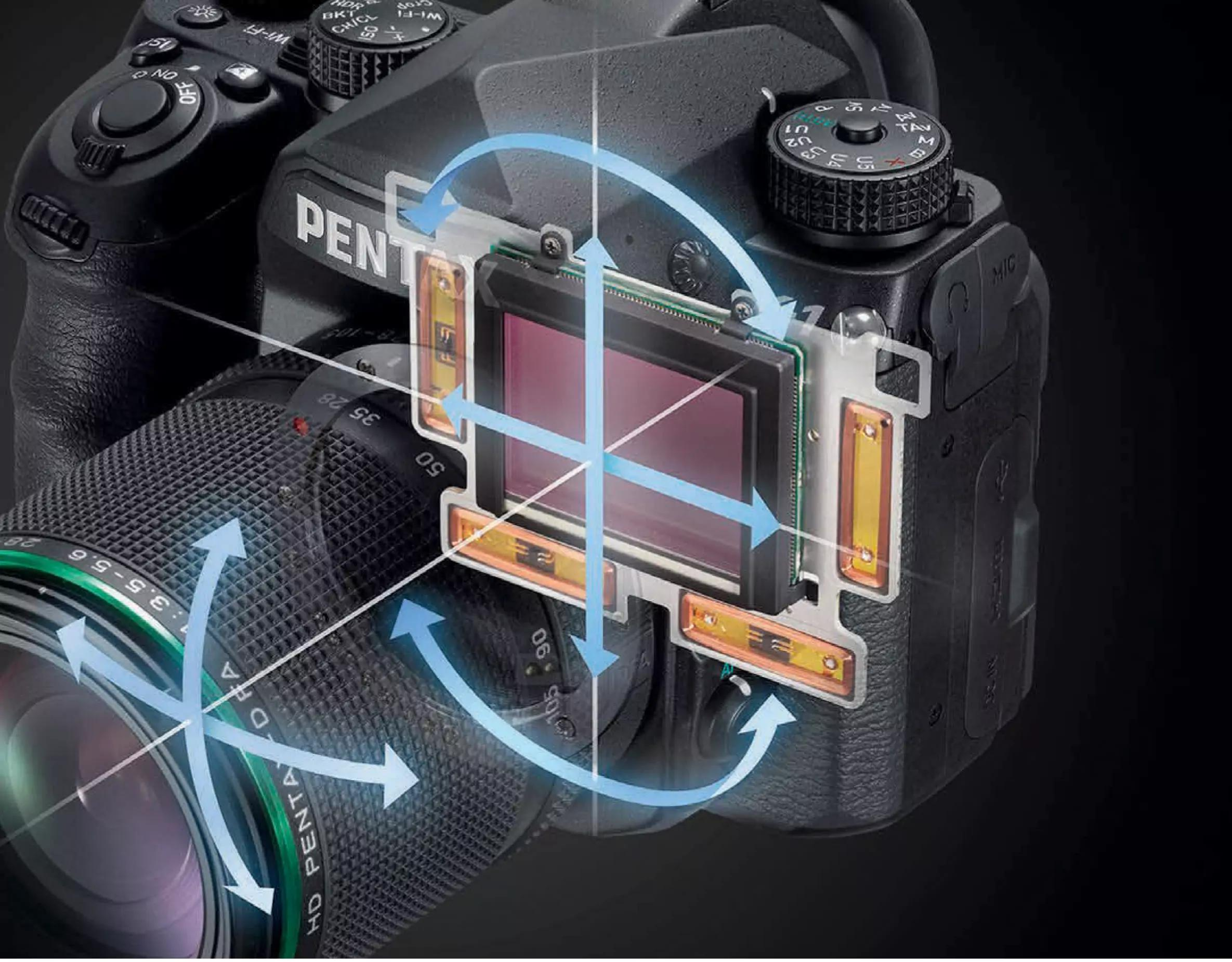
Image stabilisation can be built into the lens or camera body. Some systems use both at the same time

Image stabilisation has become so universally accepted as a useful tool that it's easy to forget it's become a mainstream feature only recently. But, now, while no camera maker would dream of selling a camera kit without some form of stabilisation except at bargain-basement prices, only around a decade ago Canon and Nikon were happily shifting shelf-loads of DSLRs with unstabilised 18-55mm kit zooms.

Perhaps because of this, there are still a number of myths and misunderstandings regarding stabilisation. Here I'm going to take a close look at all aspects of the technology, so you can better understand how it works, and how you can exploit it to get better images.

Background

In 1994 Nikon became the first company to include optical stabilisation in a camera, in a 38-105mm lens that was built into the Zoom 700VR 35mm film compact. However the following year, Canon introduced the technology to a wider audience with the EF 75-300mm f/4.5-5.6 IS USM: the first image-stabilised lens for SLR cameras. At around £400 it was expensive for a consumer



telezoom, and its stabilisation system was considerably less effective than modern ones, bringing perhaps two stops of benefit.

Like most transformative technologies, image stabilisation was rather derided at first; it was seen as a crutch for poor handholding that offered little practical advantage for the price. But it expanded the range of light conditions in which photographers could shoot handheld, especially given the low-ISO film most of us were using at the time. The Canon lens also introduced photographers to the benefits of a stabilised viewfinder, allowing more accurate composition.

Initially, relatively few lenses included image stabilisation, and these were mostly large, expensive telephoto primes. More than a decade passed before the technology appeared in the mass-produced, inexpensive kit lenses routinely sold with SLRs.

Canon and Nikon embraced in-lens optical stabilisation simply because with film, it was the only practical solution. Consequently, third-party lens makers such as Sigma, Tamron and Tokina also adopted in-lens stabilisation to keep their offerings competitive. However, once digital cameras started to become mainstream an alternative approach emerged, with Minolta debuting in-body stabilisation in its Dimage A1 bridge camera of 2003. Similar technology has since found its way into Pentax, Olympus (now OM System), Sony and Panasonic models. While photographers have argued over the relative merits of these two approaches, it turns out their strengths are complementary. Most recently we've seen Panasonic, Sony and OM Digital Solutions evolve hybrid systems that combine the best of in-lens and in-body stabilisation. This approach gives astonishingly effective results, with Panasonic and Olympus/OM Digital Solutions providing the current state-of-the-art technology.

What does IS do?

Whenever you're handholding a camera or lens, you can never keep it completely steady. Instead, the precise angle the camera is pointing will be continually changing, as your muscles work to counteract its weight. If this movement is sufficiently large during exposure, then your images will be blurred.

Image-stabilisation systems use gyro sensors to measure these camera movements that cause image blurring. Optical systems then move a group of elements within the lens up-and-down and side-to-side to compensate, so that the image is projected stably onto the film or sensor. In-body systems move the image sensor itself to track the shaking image; as well as moving up-and-down or side-to-side, the sensor can be rotated around the lens's optical axis.

It's crucial to understand that IS doesn't affect image blurring from subject motion at slow shutter speeds. So it's of little benefit if you need to keep moving objects sharp; on the other hand it's genuinely useful when you want to exploit motion blur for artistic effect.

Axes of evil

You'll often see image-stabilisation systems described in terms of the number of axes of shake they can counteract. In-lens systems are almost invariably 2-axis: they correct up-down and left-right angular movements (pitch and yaw). In most situations these are by far the biggest cause of blur, so 2-axis stabilisation works perfectly well for most photography.

However during long-exposure shooting, another type of camera

IBIS with manual lenses

ONE significant advantage of in-body stabilisation is that it can work with any lens you can mount on the camera. However the body has to know the focal length you're using, so that it can apply the right level of correction. So if you're working with lenses that don't communicate this information – perhaps inexpensive manual-focus optics, or classic lenses via non-electronic mount adapters – you'll have to program it in yourself. Set it wrong and the IS system will either under- or over-correct for shake, making your images more blurred than they should be. Fortunately all camera manufacturers provide an interface for doing this fairly easily.

One consequence is that it's not very practical to use adapted zoom lenses with in-body stabilisation. It's not entirely impossible, but personally, I'd turn off stabilisation instead.

Waterloo Ea
FABULOUS FASHION
The Balcony
GIFTS GALORE
The Balcony
PRET A MANGER
Self-service tickets

movement becomes important, in the form of rotation around the lens axis (or roll). There's nothing in-lens systems can do to combat this, but in-body systems can by rotating the sensor in the opposite direction, meaning 3-axis in-body systems can be more effective with slow shutter speeds, particularly when shooting with wideangle lenses.

For close-up photography, there's another problem. At high magnifications, movement of the lens's entrance pupil a fraction of a millimetre upwards or sideways can result in visible blurring. This can be addressed by in-lens and in-body systems, but relatively few lenses attempt to deal with it. However a few of Canon's macro lenses include 'Hybrid IS' that provides 4-axis correction. In-body 5-axis systems can also correct for this. Some may realise that there's a sixth 'axis', a back-and-forth movement of the camera relative to the subject, but this can only be compensated by continuous autofocus.

How slow can you go?

Camera and lens manufacturers generally like to tell you how effective their stabilisation systems are, and the CIPA standard of testing now used should ensure that these quoted numbers are comparable. You'll see wording along the lines of 'the optical stabilisation delivers four stops benefit', which essentially means that you'll be able to use shutter speeds four stops slower than would be otherwise possible. So you need to know what shutter speed you could safely use without IS.

To define a 'safe' shutter speed at which images shouldn't be blurred due to hand-shake, photographers have traditionally used the '1/focal length' rule of thumb. This suggests that in order to get sharp images, you need to shoot at speeds of at least 1/50sec with a 50mm lens, or 1/25sec with a 24mm lens, or 1/100sec with a 100mm lens, and so on. This assumes you're using a full-frame camera; otherwise, you'll need to take the crop factor into account. So with that 50mm lens, you would need at least 1/80sec on an APS-C camera or 1/100sec on a Micro Four Thirds model.

In reality, camera shake is random, it doesn't affect every picture in the same way. So if you take five shots at 1/50sec with a 50mm (equivalent) lens, a couple might be pin-sharp, one might be distinctly blurred, and the others somewhere in between. Drop the shutter speed to 1/25sec and you could still get one or two usable shots out of five. This random nature means that there's actually no hard cut-off point for a safe shutter speed where pictures are 'sharp' not 'blurred'.

The rule also assumes that you get the same degree of shake, regardless of the camera or lens. But there's a world of difference between handholding an 18-55mm kit zoom weighing 200g and a 1.5kg 70-200mm f/2.8. In general, as your lenses get larger and heavier, you should err towards selecting increasingly higher shutter speeds than the rule might suggest. Other factors can also affect shake such as a decent handgrip. Equally, low temperatures, high winds or even how much coffee you've had can all increase shake. Even the angle at which you're pointing the camera will have an effect; you'll get less-sharp shots pointing your camera up or down, compared to holding it level.

What's more, if you want to get pixel-sharp images from a modern sensor of 24MP or

Departures
14 14
13 13
12

Here I used a long shutter speed handheld for creative blur Sony Alpha 7 II, FE 24-70mm f/4 OSS ZA at 27mm 1sec at f/10, ISO 50

more, you'll need to use faster shutter speeds again. I'd err towards choosing shutter speeds twice as fast to be sure of getting genuinely sharp shots, meaning I'd use 1/100sec with a 50mm equivalent lens.

What this all means is that if a system promises four stops of stabilisation with a 50mm equivalent focal length, I wouldn't take that as meaning I should always get sharp shots at 1/3sec (i.e. four stops slower than 1/50sec). Instead I'd expect to be able to get most of my shots decently sharp at 1/6sec, with a reasonable chance of getting some sharp pictures at slower shutter speeds, especially if I shoot a few duplicates. Likewise, with a 70-200mm f/2.8 giving four stops of stabilisation, at the 200mm end I'd expect to need 1/30sec at least to be confident of getting sharp results.

That said, if you exploit image stabilisation fully, it's possible to get sharp images handheld at slow shutter speeds. This is particularly the case when you can support the camera and lens by leaning on a wall or using a monopod. You'll get best results when you also practise good

> 'If you exploit image stabilisation fully, it's possible to get sharp images handheld at very slow shutter speeds'

IS also lets you use smaller apertures Canon EOS 5D Mark IV, Tamron 70-200mm f/2.8 G2 at 200mm, 1/30sec at f/16, ISO 100

IS and tripods

YOU'LL frequently come across the suggestion that image stabilisation must always be turned off when using a tripod. This was certainly true with older IS systems, which had an obvious tendency for the image to drift visibly when the camera was locked down on a tripod. However, it's usually less of a problem with modern systems. It's worth considering that if you're using a long lens on a windy day, image stabilisation can be useful to combat any resultant camera movement.

As always, the best thing to do is observe carefully how your own cameras and lenses behave, and take some test shots to check whether leaving the IS turned on causes blurring. If you find it doesn't, then don't worry too much about leaving it switched on. You may well find that some other tripod-related settings disable stabilisation anyway; some cameras automatically turn it off when either the self-timer or mirror lock-up function is engaged.

Canon
EOS 5D

Above: Stabilisation is ideal for shooting handheld at night
Olympus OM-D E-M5 Mark II, 12-40mm f/2.8 at 19mm, 1/5sec at f/2.8, ISO 200

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£2.20
COURGETTE
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BROCCOLI
£4
KILO

Right: Here I was able to use a low ISO without sacrificing depth-of-field
Olympus OM-D E-M10 Mark III, 14-42mm f/3.5-5.6 at 42mm, 1/10sec at f/6.3, ISO 200

Video stabilisation

WHILE image stabilisation is equally important for both photography and video, the two require rather different things. In photography, the aim is to keep a single exposure as sharp as possible. But with video, the need is to smooth out motion between frames, so footage looks as steady as possible. This demands correction of different kinds of motion, with rotation around the lens axis and swaying movements that are slower but larger than hand-shake being particularly important to address.

Pretty effective video stabilisation can be achieved entirely electronically by matching up the footage from frame-to-frame. For example, recent Canon EOS models include in-camera 5-axis digital IS that works rather well. But it's important to understand that this is purely for video, and doesn't apply when you're shooting stills.

In my experience, though, the best results for handheld video shooting still come from cameras that offer mechanical in-body stabilisation, in particular those with Micro Four Thirds sensors such as the Olympus OM-D E-M1 Mark II and the Panasonic Lumix DC-GH5 – the latter being the camera of choice for handheld video.

handholding technique: adopt a comfortable shooting stance, hold the camera to your eye, and support the lens with your free hand. You might be surprised by just how slow you can go.

As usual, the best thing to do is to carry out some tests to see what works for you. Shoot a detailed test scene at a range of shutter speeds, taking five shots at each. Examine the files on your computer and determine which meet your standards for sharpness. For optically stabilised zooms, you might like to test at the two extremes of the zoom range; however I've found that in-lens systems tend to be equally effective at all focal lengths. The same certainly isn't true for in-body IS, which tends to be most effective with wider lenses. So for these you need to test with a range of different lenses.

In-lens versus in-body IS

With in-lens stabilisation systems being used by the big two manufacturers, Canon and Nikon, it might be tempting to assume that it's a technically superior approach to solving the problem of hand-shake. But it's not that simple – the firms' adoption of optical stabilisation was initially dictated by the requirements of film SLRs.

However, optical stabilisation does have some significant advantages. It's more power efficient and effective with telephoto lenses, because a relatively small movement of the corrective optical group is needed to combat blur. By contrast, in-body systems simply can't move the image sensor far enough, quickly enough to compensate for shake with lenses of around 300mm or longer. Yet it's precisely these optics that need stabilisation to be usable handheld – it's near impossible to compose pictures accurately with ultra-telephotos otherwise.

Optical stabilisation can also be incorporated relatively easily into small, cheap zooms, whereas in-body IS generally adds substantial cost to a camera, along with extra bulk. With SLRs, optical IS also stabilises the image that's projected onto the separate autofocus sensor, theoretically resulting in more accurate and reliable AF compared to using in-body IS. With mirrorless cameras, of course, in-body IS stabilises the viewfinder image and the AF system.

Alternatively, with in-lens IS, you have to pay for the privilege every time you buy a lens. Optical IS has also proven difficult to include in certain lens types – there are relatively few image-stabilised wideangle zooms and fast primes on the market. In contrast, if your camera has in-body IS, every lens you can use automatically becomes stabilised.

Not all in-body IS systems are created equal. Smaller sensors have an inherent advantage over larger ones: not only is the sensor unit lighter, which means it takes less power to move, but it also has to travel a shorter distance to achieve the same stabilising effect. As a result, Micro Four Thirds cameras

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FRENCH GARLIC
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BULB

Who calls it what?

Manufacturers use a variety of terms for image stabilisation. Here's a quick summary

ACRONYM	STANDS FOR	MANUFACTURER
IS	Image Stabilisation	Canon, Olympus
OS	Optical Stabilisation	Sigma
OIS	Optical Image Stabilisation	Fujifilm, Panasonic
OSS	Optical SteadyShot	Sony
SR	Shake Reduction	Pentax (in-body)
SSI	SteadyShot Inside	Sony (in-body)
VC	Vibration Compensation	Tamron
VCM	Vibration Correction Module	Tokina
VR	Vibration Reduction	Nikon

tend to offer more effective stabilisation, and continue to work with longer lenses, compared to APS-C or full-frame models.

Dual IS systems

With in-body IS excelling in areas where in-lens IS falls down, some camera manufacturers have started to use them hand in hand. Sony, Olympus and Panasonic all offer a type of Dual IS system in which in-body and in-lens stabilisation systems work together. For example, if you were to mount an optically stabilised lens on a Sony mirrorless model with in-body stabilisation, then the lens's optical correction is used to combat tilt and yaw, while the sensor reduces blur from roll around the lens axis. Olympus's Sync IS goes further and uses both the in-lens and in-body systems together to correct larger tilt-and-yaw movements.

Hybrid systems are the most effective, but are still in their infancy. Olympus's Sync IS system is very effective with a specified 6.5 stops stabilisation, meaning its flagship OM-D E-M1 Mark II mirrorless camera allows handheld shooting at shutter speeds longer than a second with the M.Zuiko Digital ED 12-100mm f/4 IS Pro lens. But the firm only offers one other optically stabilised lens, the M.Zuiko Digital ED 300mm f/4 IS Pro. Meanwhile, Panasonic has a larger range of stabilised lenses, but only its most recent bodies include in-body stabilisation that works as part of its Dual IS system. Frustratingly, Olympus's and Panasonic's hybrid systems aren't cross-compatible, so if you use a Panasonic lens on an Olympus camera (or vice versa) you can use either the optical or in-body IS, but not both together.

IS modes

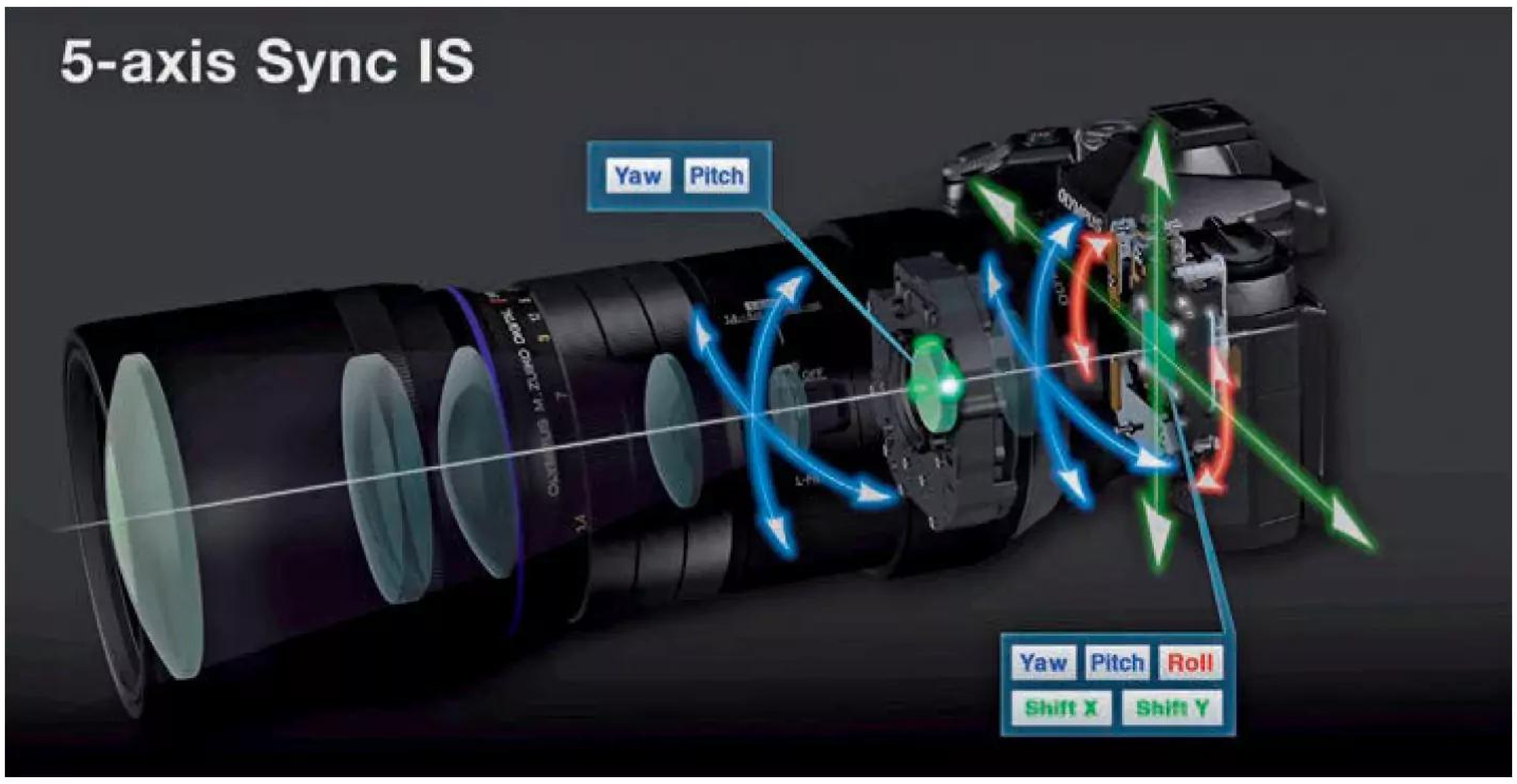
Usually you want to correct blur from all possible axes of movement. But when you're panning the camera to track a moving subject, the IS system can fight against it. So most cameras and lenses have specific modes that turn off stabilisation in the direction you're moving the camera. Most modern systems also attempt to detect this kind of camera movement and switch to panning mode. Certain lenses also offer additional stabilisation modes. For example, many Nikon lenses have an 'Active' setting that's designed for use when shooting from a moving vehicle. This lets the optics move further so they can correct larger shaking motions of the lens. However, this increased decentring can bring a sharpness penalty.

Canon and Tamron have also introduced another IS mode. While Mode 1 is for normal use and Mode 2 for panning, Mode 3 doesn't stabilise the viewfinder image and only activates IS at the point of exposure. In principle this gives the greatest stabilisation.

Creative uses of IS

Because IS first appeared on telephoto lenses, you might think it's not really needed with other lens types. After all you can safely shoot at slower shutter speeds with wideangle lenses, while large-aperture primes let you use higher shutter speeds to avoid handshake. This rather misses the point. Image stabilisation is useful whenever you might want to shoot with a slow shutter speed handheld, regardless of the lens you're using. Put simply, it lets you use the lowest possible ISO for the best quality while keeping shutter speeds high enough to avoid motion blur.

You can also exploit stabilisation for creative uses. Typically, you might wish to use a small aperture for extended depth of field. But you could also use a long shutter speed for deliberate motion blur, without a tripod. Alternatively in the low-light, high-contrast situations such as shooting in town at night, stabilisation can enable you to expose to maintain highlight details, while also using low ISO settings to exploit their greater dynamic range thereby extracting details in the image's darker areas.



In Olympus's Sync IS, the in-lens and in-body systems work together to combat pitch and yaw motion

Sharp shooter

Four leading pro photographers explain their sharp shooting techniques to **Will Cheung**

With amazing lenses, intelligent AF systems and shake-defeating technology at our disposal, your photographs should be as sharp as those from the four pros in this feature. The thing is, human beings are fallible and picture quality may not be quite on point for any number of reasons.

So, if you're striving for pictures that exhibit outstanding clarity and crispness but are falling a little short right now, this is where your photography takes a turn for the better. We talked with four leading pro photographers of different disciplines to give you an insight into how they set up and work, but first, let's chat about the fundamentals of sharp shooting.

Start sharp to stay sharp

Taking pictures is a linear process and the ideal is to get everything right at each stage. So, if your pictures are consistently not up to expectations it makes sense to start at the beginning, and that's you.

Take an honest look at your technique. Are your elbows tucked in and is your left hand supporting the lens? Are you stabbing the shutter button and jerking the camera or giving it a smooth press? It's basic stuff but revisiting your technique won't do any harm.

Next, look at your kit. It could be that the camera or lens has had a knock and needs a service, or the problem might be as simple as dusty lenses or poor-quality filters.

Avoiding the shakes

When it comes to ruined shots the biggest culprit is camera shake, but there's help here in the form of image stabilisers, in-body and in-lens. They enable sharp stills at remarkably slow shutter speeds and they give smooth video footage when a tripod or other support is not available. But reliance on tech can lead to complacency.

If you haven't tested your handholding skills, get your kit and venture outside for a real-life test. With the IS active, take shots from 1/60sec down to 1sec and at the extremes of your zooms. A close check of the results will indicate your handholding limits for general photography with different lenses.

Stop any movement with a fast shutter speed
Fujifilm GFX 50R, 120mm, 1/1000sec at f/8, ISO 400

© WILL CHEUNG

While IS might mean sharp shots with slower shutter speeds, don't forget a tripod or monopod. Supports might not suit everyone or every subject, but they are invaluable tools and allow shots that would otherwise be impossible.

With rapidly moving subjects, the choice of shutter speed is critical for sharp shots but it's not all about fast speeds and you have to think about the effect you want. For racing cars 1/1000sec or 1/2000sec are good starting points. However, while your shots might 'freeze' a racing car, the result might look static. If you find this, use 1/500sec and panning to give a sharp shot with a sense of action.

Control the light

While shutter speed is the priority for action shooters, the aperture comes first with landscape, macro and portrait photographers. People photographers like to shoot at wide-ish apertures so the subject stands out from the background and this

In low light, set a higher ISO to allow smaller apertures or faster shutter speeds. The raw file was put through DxO PureRaw 2 to reduce digital noise
Nikon D800, 15mm, 1/125sec at f/3.5, ISO 3200

© WILL CHEUNG

has the benefit of enabling fairly fast shutter speeds. Landscapers and macro workers prefer f/11 or f/16 to give plenty of depth of field and this means slower shutter speeds that require steady hands, effective IS or a tripod.

So far, we have talked about aperture and shutter speeds and balancing the two for sharp pictures and the pictorial effect you're after, but we haven't mentioned ISO, a very powerful feature.

In a low-light scenario, if the lens is at its widest aperture and the shutter speed close to or below your handholding limit, the next option is to set a higher ISO value.

This can be done manually but digital cameras have auto ISO so the speed is automatically changed when needed. The feature works with the camera's native range, typically 100-12,800, and that is a potential issue. Quality at the higher speeds is less good, with poor colours, weaker blacks and digital noise breaking up detail. To avoid disappointment, dig into the ISO menu and set an upper limit of ISO 1600 or 3200 to keep quality high and still give a reasonably fast, handholdable shutter speed.

Lens matters

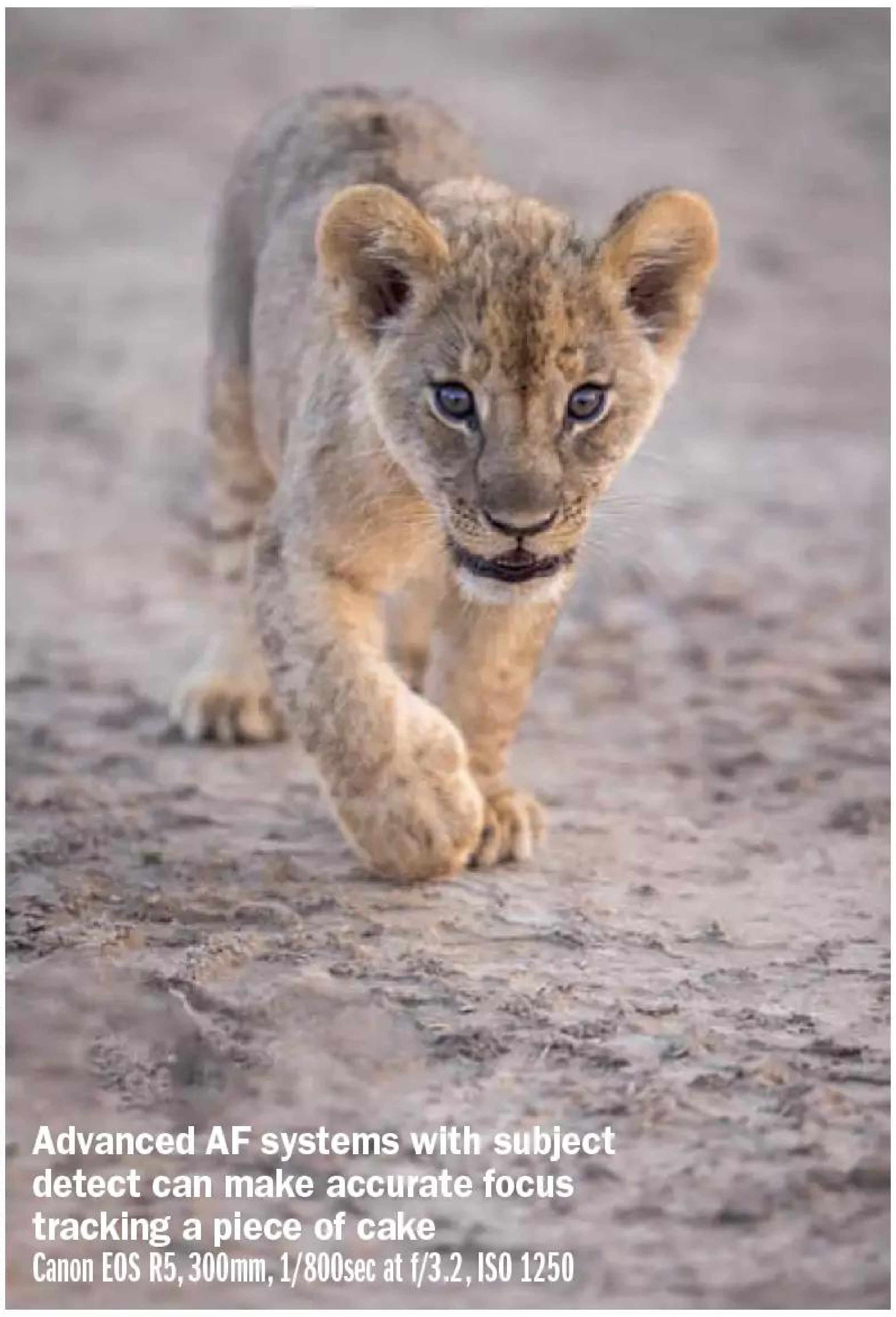
High shutter speeds, impeccable technique and stabilisers count for nothing if you're not making the most of your optics. Which aperture you use is often a creative decision, but the value used also has a fundamental impact on sharpness.

Generally, lenses are not delivering their best at either extreme of the aperture range. At their maximum aperture, lenses give good crispness in the centre, but the image often gets softer towards the corners. This improves with stopping down – even stopping down by one f-stop can produce an improvement, while many lenses are at their best at two or three f-stops from the maximum. As the lens approaches the minimum aperture (f/16, f/22) diffraction kicks in and this results in softer images; the smallest lens aperture always suffers the most.

Lens performance is crucial but irrelevant if the focus is off. Most of us rely on autofocus so it is important that the camera is correctly set up to suit the subject and how you like to shoot. Many shooters use single point or small zone AF and the focus joystick or touch AF. However, with very capable face/eye detect and subject modes, more and more people are happy to leave it up to the camera.

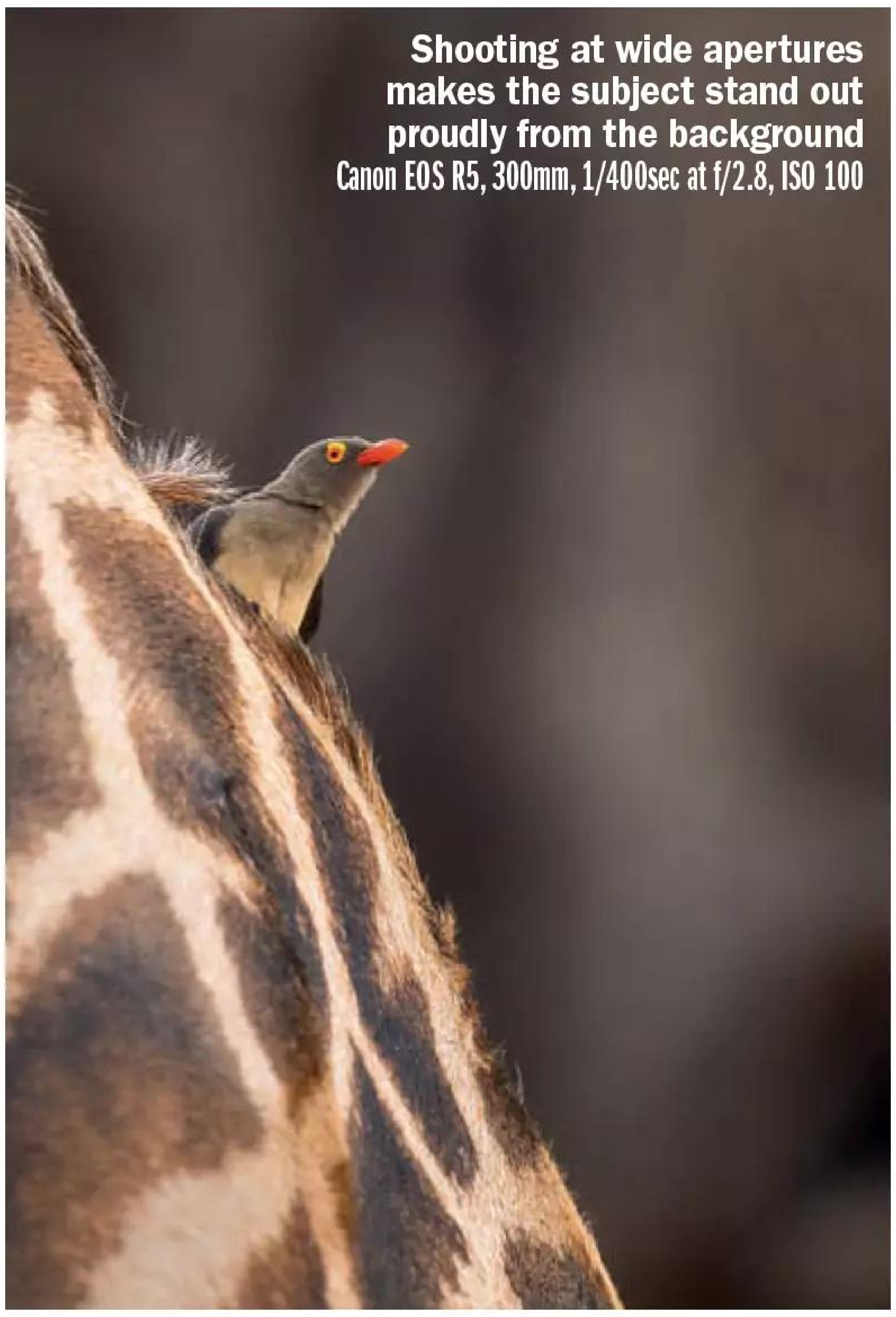
Finally, just a brief word on sharpening in editing. If you've brushed up on your capture technique you should be getting sharp shots that don't need much help in software. If your shots aren't quite sharp due to poor focusing, subject movement or weak lens performance, there are tools and softwares that can help with the problem, but the moral is get it right in-camera.

Shooting crisp pictures is a habit and a good one to get into. Follow our advice and that of our four pros here, and get sharp.



Advanced AF systems with subject detect can make accurate focus tracking a piece of cake
Canon EOS R5, 300mm, 1/800sec at f/3.2, ISO 1250

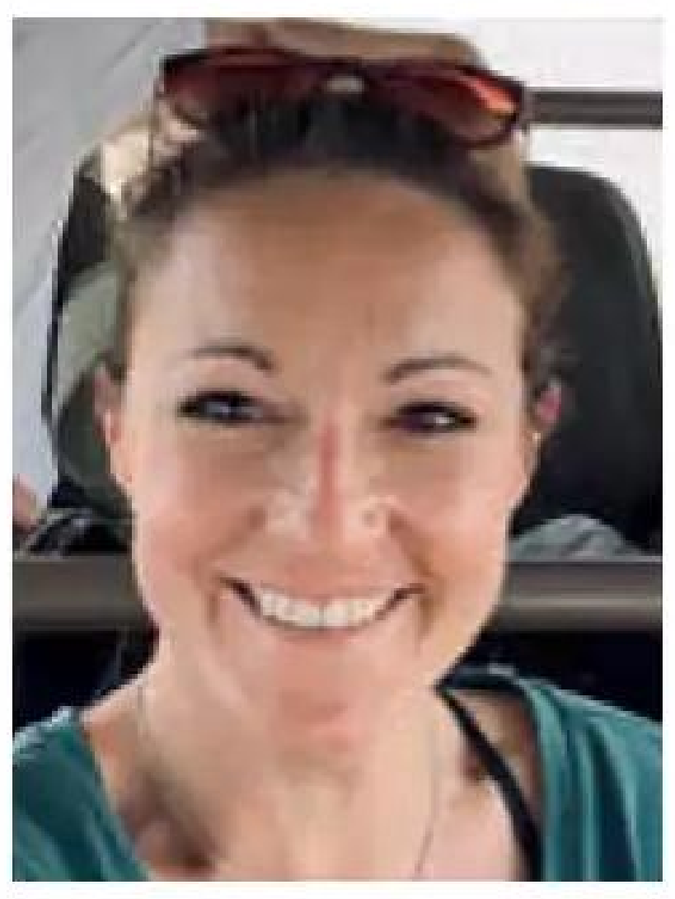
PICTURES ON THIS PAGE © EMMA HEALEY



Shooting at wide apertures makes the subject stand out proudly from the background
Canon EOS R5, 300mm, 1/400sec at f/2.8, ISO 100

Wildlife

Emma Healey



Emma is passionate about wildlife, especially observing animal behaviour and capturing it with her camera. She loves creatures great and small and enjoys photographing insects too.

Her outfit comprises two Canon EOS R5 bodies, and her favourite lens is the EF 300mm f/2.8 used with an EOS R adapter.

Emma works for specialist tour operator Wildlife Worldwide and has led client workshops to Brazil, Zambia, Botswana, and most recently northern Greece to photograph pelicans.

www.emmahealeyphotography.com
www.wildlifeworldwide.com

Whenever I am leading a workshop, one of the first things I encourage clients to do is to get to know their camera and make it work for them. I think adjusting settings should be instinctive and you need to be able to alter them quickly by touch when the camera is up to the eye. It's even worth practising camera handling in the dark. This will help you to get sharp pictures, as fiddling with settings wastes valuable time and risks missing the shot. In a hide, it means you can change settings quickly without having to turn on a torch to see what you're doing.

I'm a control freak so I am always in manual exposure mode. I like to manually change ISO too but sometimes when there is a lot going on I will use auto ISO. In sunlight I use ISO 100-200 and change speed to suit the lighting, and my top limit is generally ISO 3200 at dusk or if the light is low. I am always checking the exposure readout in the viewfinder, and I would rather get a sharp and slightly dark image that I can adjust and fine-tune in editing.

On location, I invariably have the EF 300mm f/2.8 on my EOS R5 with an adapter and have an aperture of f/2.8-3.2 set. F/3.2 is my safe space and that's fine so long as I get the subject's eye in focus. However, I have been shooting a lot at f/2.8 for the effect it gives where the eye is sharp and the even more shallow depth of field makes the rest of the scene look quite dreamy. That is my normal approach but if I had a lion in front of me and I wanted its whole face to be sharp I would set to f/8. If I have the time, I would probably shoot at both apertures and pick the one I prefer later.

I'm lucky because I have steady hands so I can shoot at slower shutter speeds with no problem. I don't tend to use tripods/monopods and find them restrictive because animals can move quickly and I don't want to miss the shot.

The exception is when I'm shooting macro focus stacks, which I would rather do with a tripod when possible. However, I also do stacks handheld too.

I'll sometimes use a slightly higher shutter speed than normal even in good light. So I'll do some 'safety' shots at, say, 1/1250sec to make sure I've got some sharp ones before dropping down to around 1/500sec – this is even with the in-body image stabiliser. Provided that it is reasonably still I can handhold the EOS R5 and 300mm f/2.8 at 1/100sec. I'm not happy at that sort of shutter speed but I will if there's no choice.

My focusing set-up is for back button AF so I have the AF-ON set to activate spot AF and the AE-L button for wide zone AF with eye detect/tracking. I use servo AF and on the EOS R5 either Case 2 or 3: for birds in flight it's Case 2, and Case 3 for animals running around.

I will usually use eye detect/tracking unless I have a wild dog, cheetah or leopard in shot – these mammals have too many spots and confuse the eye-detect system so it's best to stick with spot AF.

Canon's animal eye detect was designed and developed for bird photography. It can often find a bird in a tree of sticks; it's incredible. But you can have a leopard with big eyes in front of you and the eye detect will go to its ear or the tip of its tail. With a leopard, I will try eye detect first but if it doesn't immediately pick up the eyes I use AF-ON for spot AF and with the focus lever move the AF point to the part of the scene I want sharp. A firmware update was meant to improve this but it still needs work.

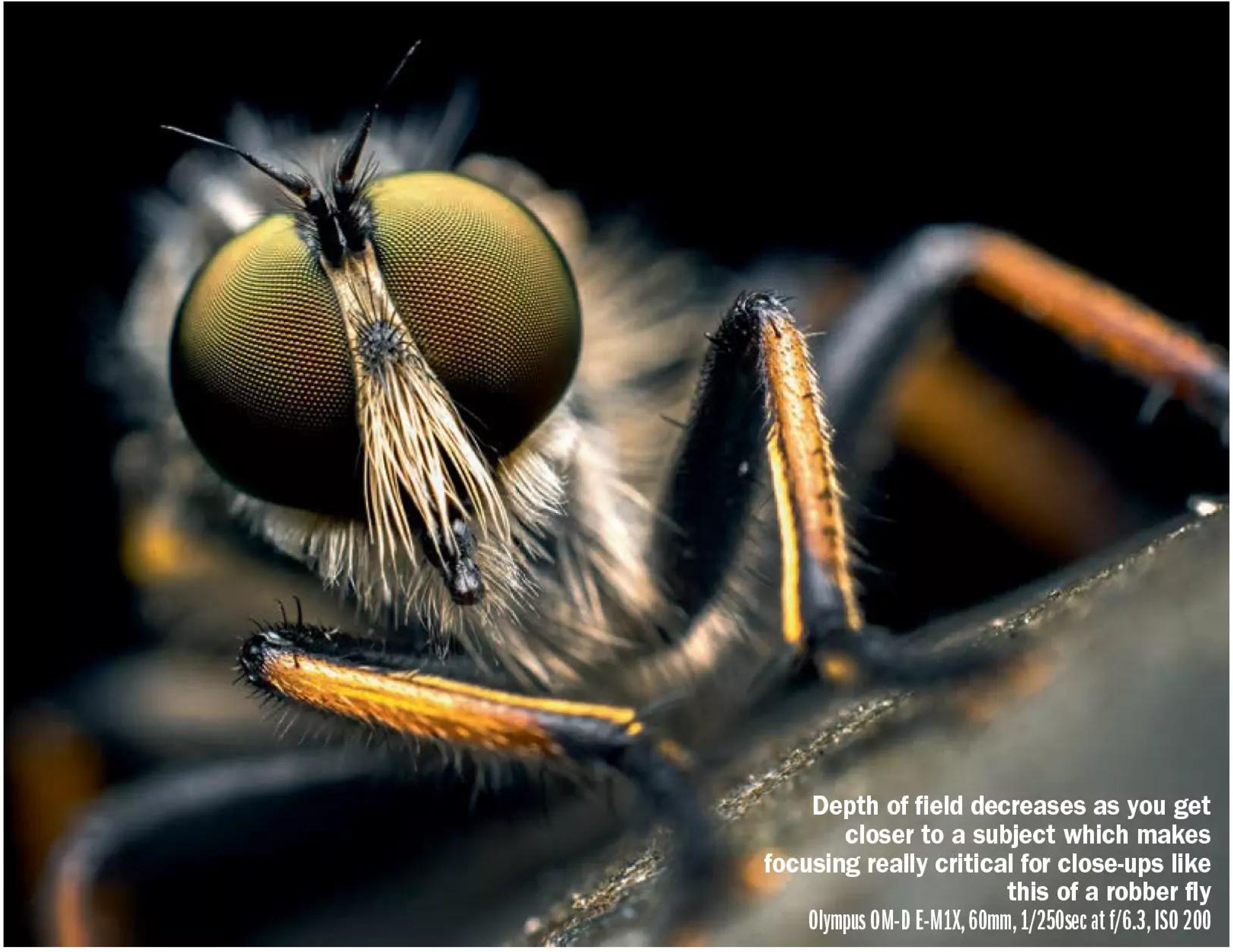
Poor focusing here would mean this shot wouldn't be worth keeping
Canon EOS R5, 300mm, 1/1250sec at f/2.8, ISO 320

Macro

Geraint Radford

'I class myself as a nature photographer with a macro lens,' wildlife pro Geraint says. 'While I love insects, I know not everyone does and I want everybody to get into nature photography, whether it is flowers, fungi or bugs.'

Geraint is an OM System ambassador and uses the OM-1, mostly partnered with the 60mm macro lens and FL-1900R flash.
Instagram: @geraintradfordmacro



Depth of field decreases as you get closer to a subject which makes focusing really critical for close-ups like this of a robber fly
Olympus OM-D E-M1X, 60mm, 1/250sec at f/6.3, ISO 200

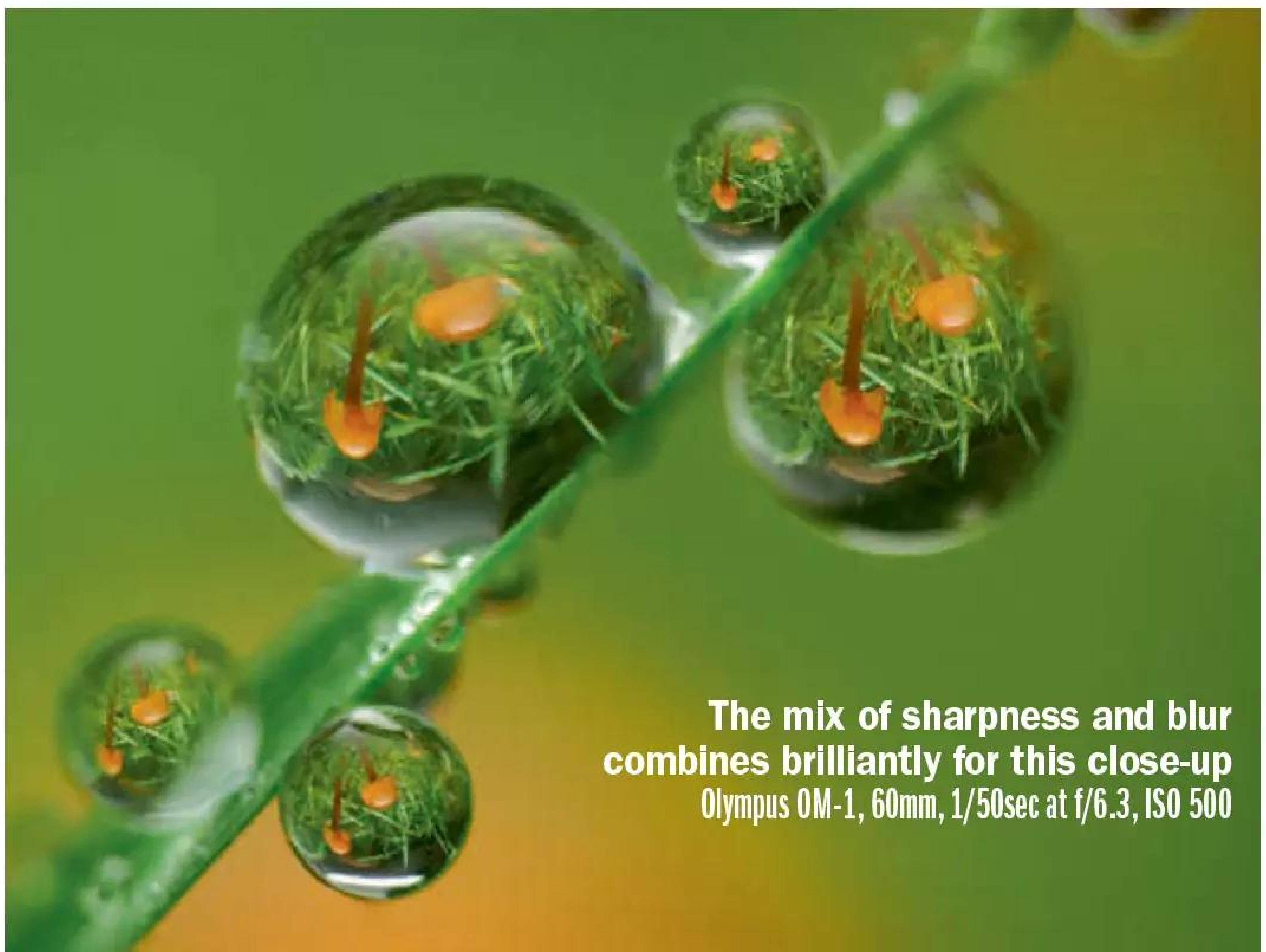
PICTURES ON THIS PAGE © GERAINT RADFORD

For sharp macro shots, stability is key and that is easier if your kit isn't heavy. I use the OM System OM-1 with 30mm f/3.5 and 60mm f/2.8 macro lenses.

I always shoot handheld. I am blessed with steady hands, and can handhold the 60mm macro lens very close to the subject at 1/10sec – and that comes from familiarity with the kit and constant practice. Also, I shoot handheld because I have developed my shooting style to get in, get the shot and move on and that disturbs the subject less. It keeps you moving and exploring too.

I've tried tripods but they don't suit my working style. I like the adventure of taking my camera out and shooting what's happening without having to set things up. Besides, the OM-1 with its 8EV benefit IBIS system is so stable that it's almost like shooting on a tripod.

I tend to get the story and composition first and then find focus and worry about detail. You can have a very sharp picture but if it is badly composed and not nice to look at, all it has is sharpness. One of my favourite images that kickstarted this journey is of a springtail shown here. It is tiny, literally 1.5mm, and I shot it from underneath a leaf and behind that leaf is a fungi that is 0.5mm. To get those two subjects sharp in one shot is impossible. So I did a focus stack of the fungi first, pulled the camera back, and waited for the springtail to come into shot and then photographed it. Blending those elements was a challenge but I got the story.



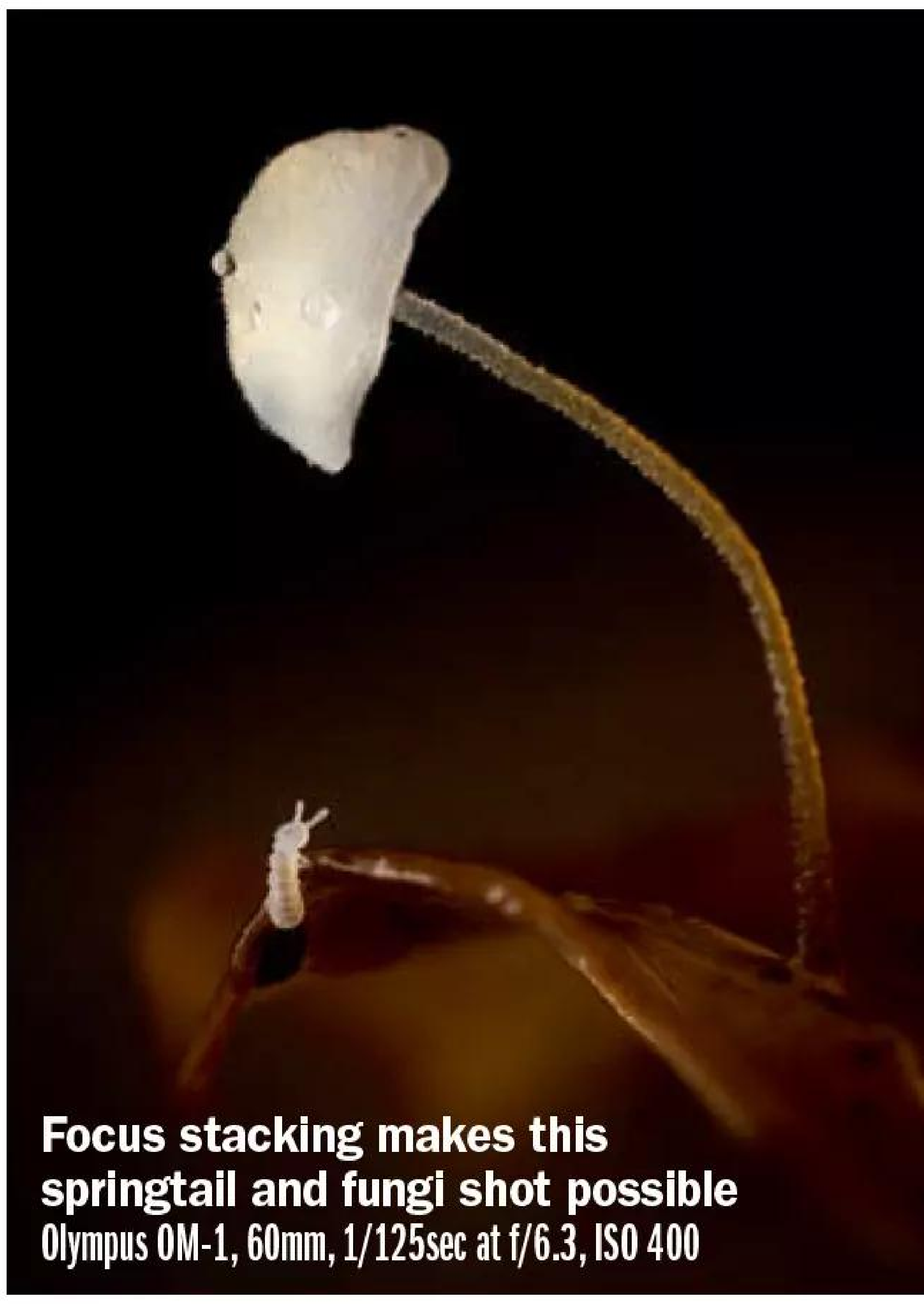
The mix of sharpness and blur combines brilliantly for this close-up
Olympus OM-1, 60mm, 1/50sec at f/6.3, ISO 500

In terms of set-up, I have the AF-ON button set to continuous AF and the shutter button to release only. For single shot AF, one touch of the AF-ON button brings the shot into focus.

I use the smallest single focus point so I can be really clinical with focus. I can shoot an insect through blades of grass for soft out-of-focus framing and the OM-1 is so stable the AF doesn't hunt. I use autofocus unless I'm at very high magnifications. With extension tubes or the Raynox DCR-250 close-up lens, everything is manual, even focus stacking.

I prioritise focus stacking over focus bracketing because it eliminates doubt. The camera shoots up to 15 raw files, which are retained, and quickly blends them to give a JPEG. I check the stacked preview carefully and if the camera has blended it successfully, I know when I process the raws in Photoshop later that it's going to work; and knowing that in the field is a massive advantage. It saves me shooting hundreds of shots hoping for the best.

For me, focus stacking is a creative feature as well as a technical one. It can be used to gain depth of field, but also to limit it. Say you're shooting a flower. To get the flower sharp you'd use f/11, but that means the background is quite distinct. With stacking you can limit where the depth of field ends so you can use f/2.8 with up to 15 frames to get the flower sharp against a blurred background.



Focus stacking makes this springtail and fungi shot possible
Olympus OM-1, 60mm, 1/125sec at f/6.3, ISO 400

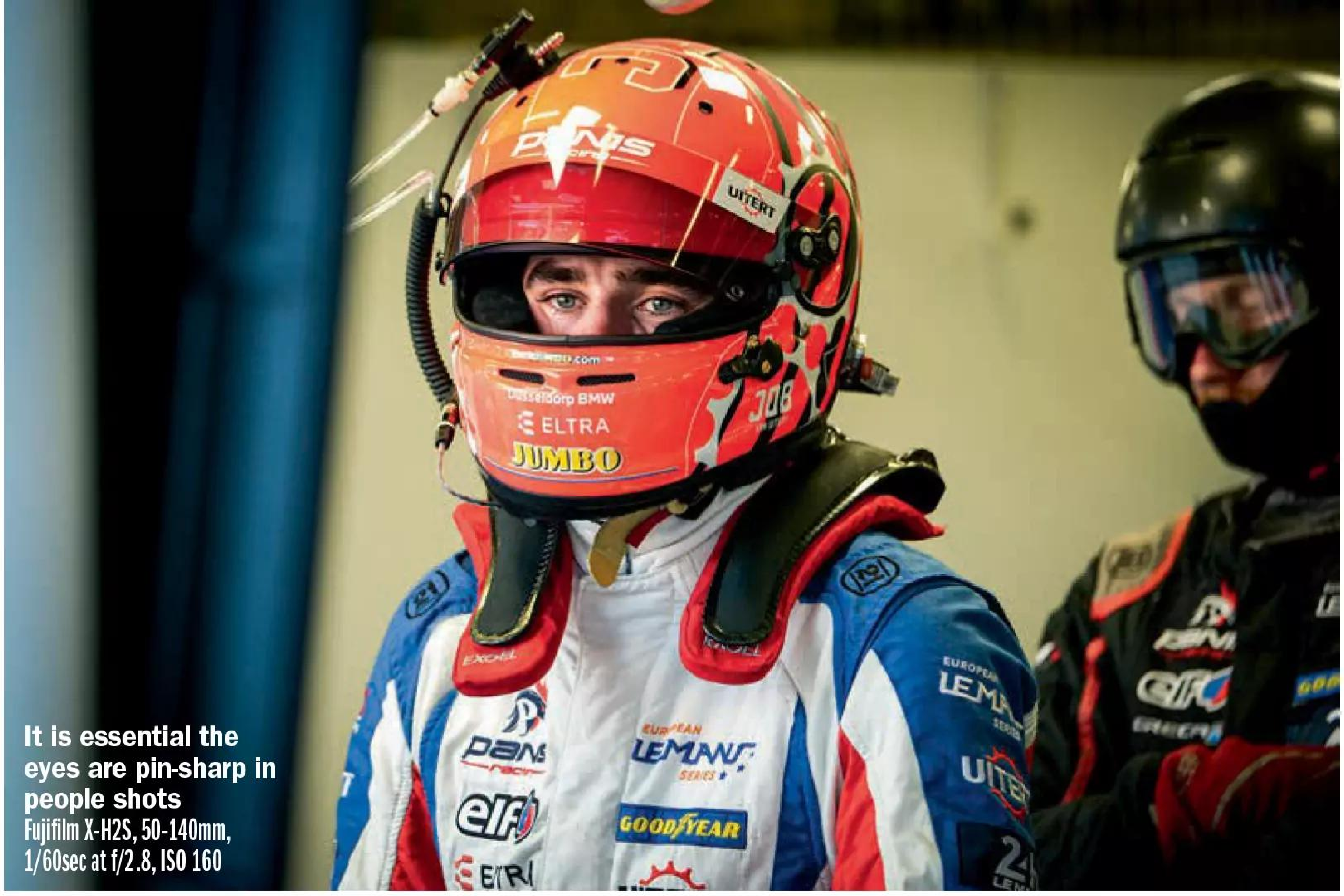
In a typical scenario with an insect on a flower I go for 15 frames with a differential setting of five which is a nice happy medium provided I can set an f/stop for enough focus to cover that differential. I usually stack at around f/5.6.

Finally, shooting handheld macro, flash is your best friend. I use the OM System FL-900R speedlight. It recycles fast enough for focus stacking, but I use it responsibly because subject welfare is important.

Jeff Carter

Jeff has over 25 years' experience as a pro photographer specialising in motorsports although he is also known for his commercial and fine art work. Since 2009 he has worked for the FIA (Federation Internationale de l'Automobile) providing stills and video for its website and social media feeds.

He was a Fujifilm X-photographer from 2015 until 2022 and helped the brand with the development of its X Series system and continues to work with the company. His current outfit includes the Fujifilm X-H2 and X-H2S. **www.macleanphotographic.com**



It is essential the eyes are pin-sharp in people shots
Fujifilm X-H2S, 50-140mm, 1/60sec at f/2.8, ISO 160

The first thing with any genre of photography – and especially action – is get to know your camera system inside out. If you're looking through menus thinking what to do, you're not concentrating on what's going on in front of you. Using your camera should be instinctive and everything should be set up for the genre you're shooting. It's the biggest step to getting sharp images.

I'm not averse to bumping up the ISO to get the required shutter speed and the noise performance of the X-H2/X-H2S is remarkably good. It's a very different situation from a few years ago when I was shooting rugby at Murrayfield using the X-T2 with 100-400mm lens. I was at ISO 12,800 and the results were grainy, but I needed the high ISO to get 1/1000sec. When I bought the Fujifilm 200mm f/2 I could shoot at ISO 1600 which was so much better.

Which shutter speed I use depends on the shot I am going for. Panning is something I do a lot. I start with a shutter speed of 1/125sec and go slower from there. But this is the arty stuff I do after I have the sharp shots the clients want and at races such as Le Mans I have plenty of time.

For sharp head-on car shots, I use a minimum of 1/1000sec, maybe 1/2000sec or 1/4000sec. Being able to do this without increasing ISO is the beauty of having a fast-aperture lens.

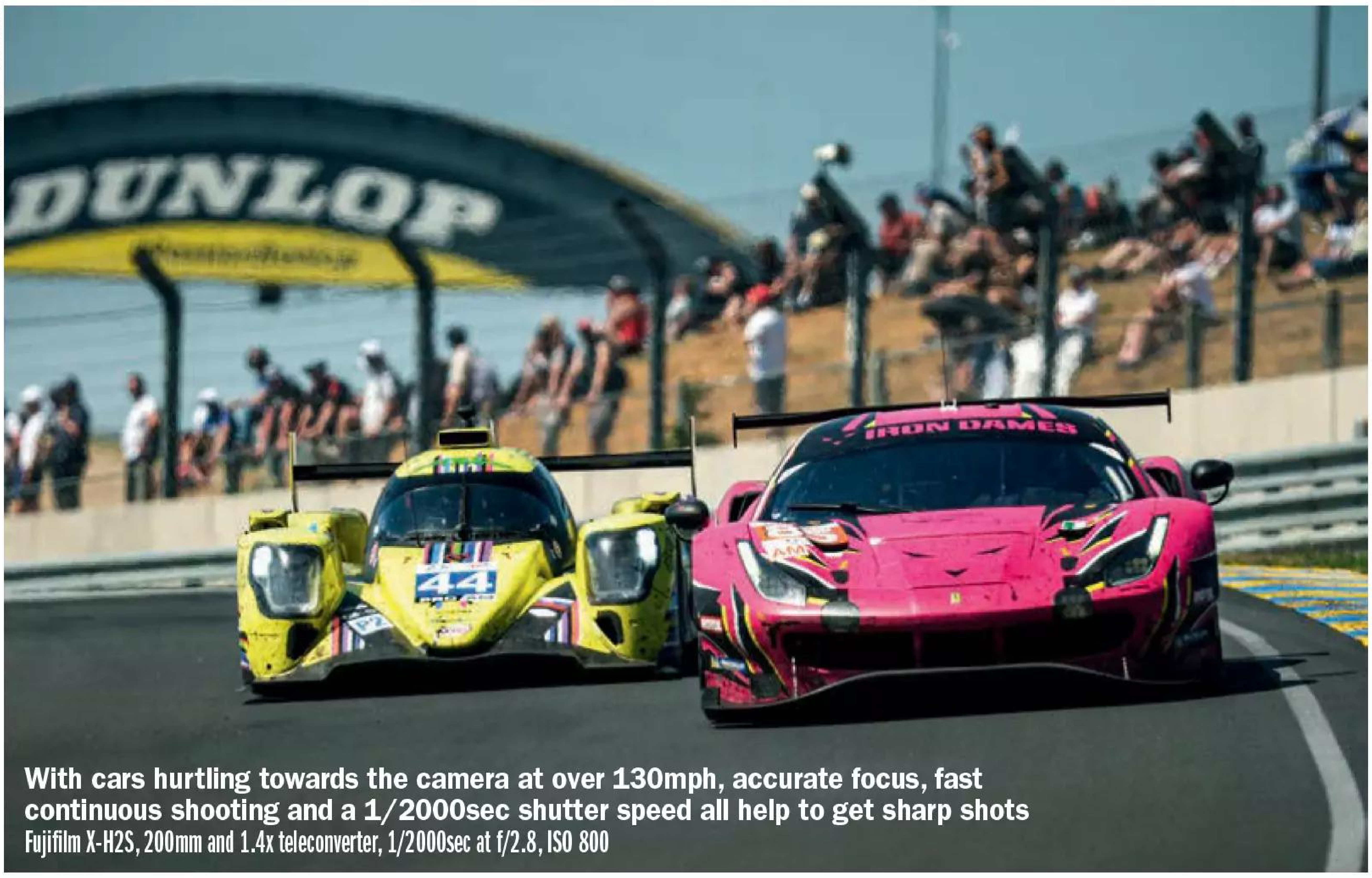
The autofocus on the X-H2 and, in particular, the X-H2S is lightning-fast. In all honesty, I thought Fujifilm AF was slightly behind the game compared with Canon and Sony, but I feel Fujifilm has caught up and the X-H2S is now Sony-good. I did a test at 40fps using the camera's electronic shutter – normally I use the mechanical shutter – and shot a car coming towards me doing over 130mph and the 200-odd shots in the sequence were all sharp. I was impressed with that.

As a car approaches, I aim the AF point on the windscreen sun strip that the cars I shoot have. I'm mostly on single point, sometimes the 3x3 zone, and move the point around as needed. I'm always aware that the AF system can misbehave at critical moments, so I tend to be old school and put the focus point where I want it.

The AF can struggle with cars coming towards you with their headlights on or with reflections off the windscreen. Such occasions can throw the AF off, but it's only for the odd shot and if the camera does lose focus it's reacquired quickly.

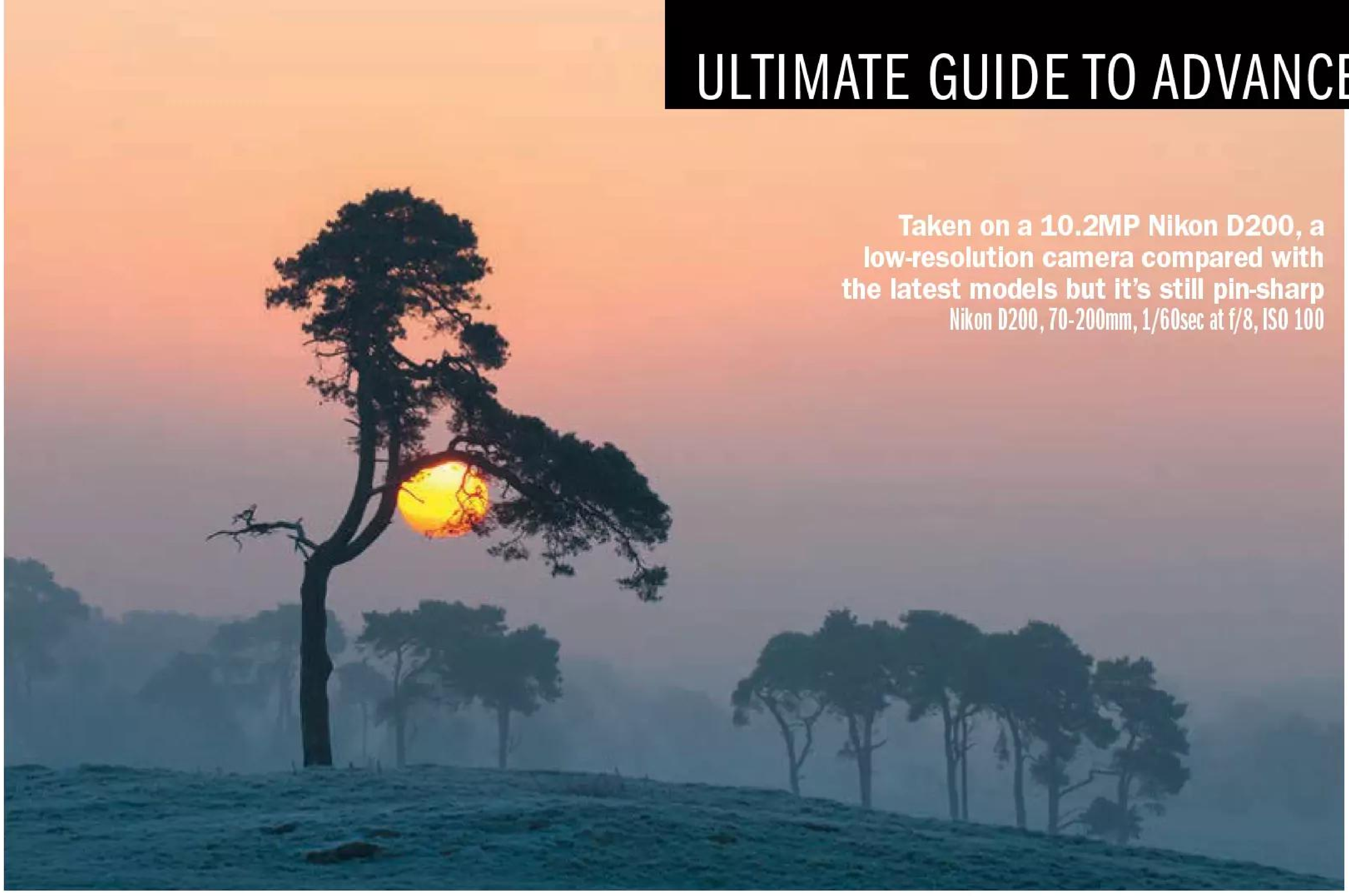
At night, with cars coming straight towards me the AF will be all over the place so it's over to manual focusing. I just focus on a bollard or something at the side of the track and shoot just before the car gets there.

I try not to show any wheels because shooting at fast shutter speeds the wheels are frozen and the cars look like they are parked. So, to show speed when shooting head-on I have cars side by side or one just slightly behind the other; a single car on its own won't look good unless there is something going on.



With cars hurtling towards the camera at over 130mph, accurate focus, fast continuous shooting and a 1/2000sec shutter speed all help to get sharp shots
Fujifilm X-H2S, 200mm and 1.4x teleconverter, 1/2000sec at f/2.8, ISO 800

PICTURES ON THIS PAGE © JEFF CARTER



Taken on a 10.2MP Nikon D200, a low-resolution camera compared with the latest models but it's still pin-sharp
Nikon D200, 70-200mm, 1/60sec at f/8, ISO 100

Landscapes

Nigel Danson

Pro landscape photographer Nigel is a long-term Nikon user and currently uses a Z7II for stills and a Z6II for video. The duo is supported by three lenses, the 14-30mm, 24-120mm and 70-200mm. On location he also takes a drone and a Benro Mach 3 tripod.

Nigel started his YouTube channel in 2017 after a near-fatal car accident in Yosemite National Park; he now has well over 430k subscribers and new videos are posted every Sunday.

www.nigeldanson.com

There's so much more to picture sharpness than using lenses at their best apertures. People get carried away with sharpness and don't concentrate enough on composition, telling a story, the light and all the other things that make a great image.

The equipment and how many megapixels you have is obviously key. If you define sharpness by how large you can print an image then megapixels are important. It's less critical if you define sharpness by how good it looks onscreen. I took the sunrise shot shown here 18 years ago on the Nikon D200 and it is sharp and just 10.2MP.

What is important is lens quality. If you want the sharpest image, a prime lens will give better quality compared with a zoom. I have a 50mm f/1.8 and if I took a shot at f/5.6 and did the same at 50mm on my 24-120mm, the 50mm will definitely be sharper. But the 24-120mm is versatile, and the ability to get the shot and tell the story matters.

You should also understand the characteristics of your lenses. For instance, if you are shooting a lone tree across a valley with a 100mm lens, you're better off on most current lenses shooting at f/4 rather than f/8 or f/11 because modern lenses are best at wider settings and get less sharp as they are stopped down.

Then it comes down to how you use your equipment. In an early morning shoot the shutter may be 1/2sec or slower, so you need to have the camera on a tripod, and then there are techniques around that.

Nikon cameras have an exposure delay mode which takes the picture a set time after the shutter release has been pressed. I use it to avoid camera shake; on other brands you can use the self-timer.

A big mistake many tripod users make is pressing the shutter button for a one-second exposure, but by doing that they are shaking the camera. It is easily avoided by using a timer or wireless remote.

One technique I employ when I am shooting around 1/15sec is using the touchscreen monitor to take the shot.

With seascapes accurate timing is essential and this method means you can time the shot and be precise with focusing, which brings me on to depth of field – that I see a lot of people struggling with.

Most of the time in scenics you want everything sharp, so depth of field control is key.

I understand depth of field and the characteristics of my lenses. I know if I shoot at 24mm at f/10 everything is sharp if I focus at a certain point. A good tip is to use an app like PhotoPills that tells you the depth of field for your camera and focal length at a given aperture when focused at a certain point.

A really useful technique that I use a lot is focus stacking. Often, I'm using a wide lens so that means there's more in focus in the first place but if I stack, I will take two shots to merge in Photoshop. If I am unsure then I will take shots focused on the foreground, midground and background so I have all the essential data.

Advanced focus modes are important with subjects such as wildlife. With landscapes I use single spot AF and manually pick where I am going to focus.

In editing, I think people get carried away and apply too much sharpening and that creates an artificially sharp image. Use a little sharpening in post but don't overdo it.

Learn to control depth of field for supreme front-to-back sharpness
Nikon Z7, 14-30mm, 1.6sec at f/14, ISO 64

PICTURES ON THIS PAGE © NIGEL DANSON

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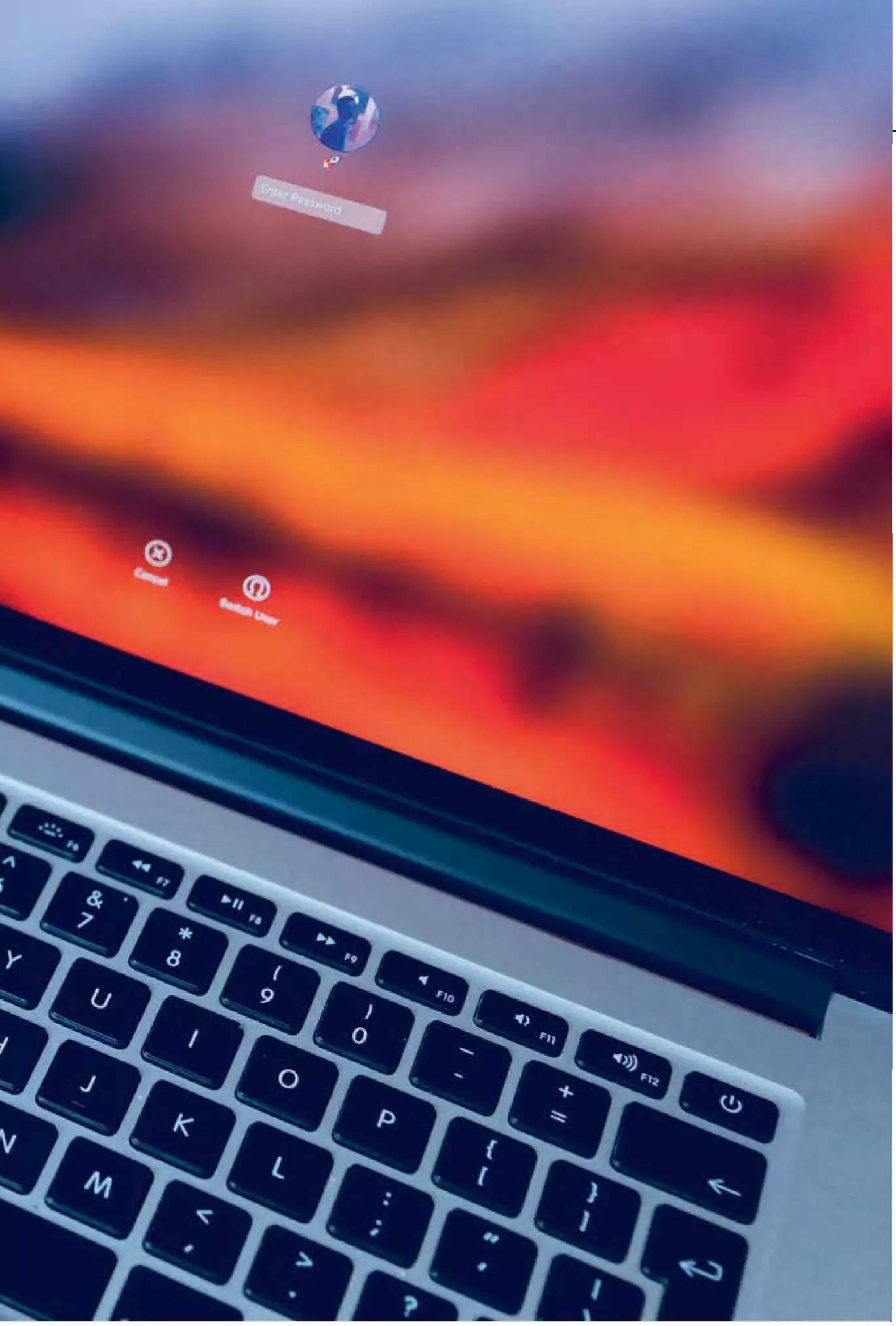
Build your own website

Want to showcase your work online in a professional format but without a high price tag? **Joshua Waller** talks us through the best website builders for photographers, which don't cost a fortune



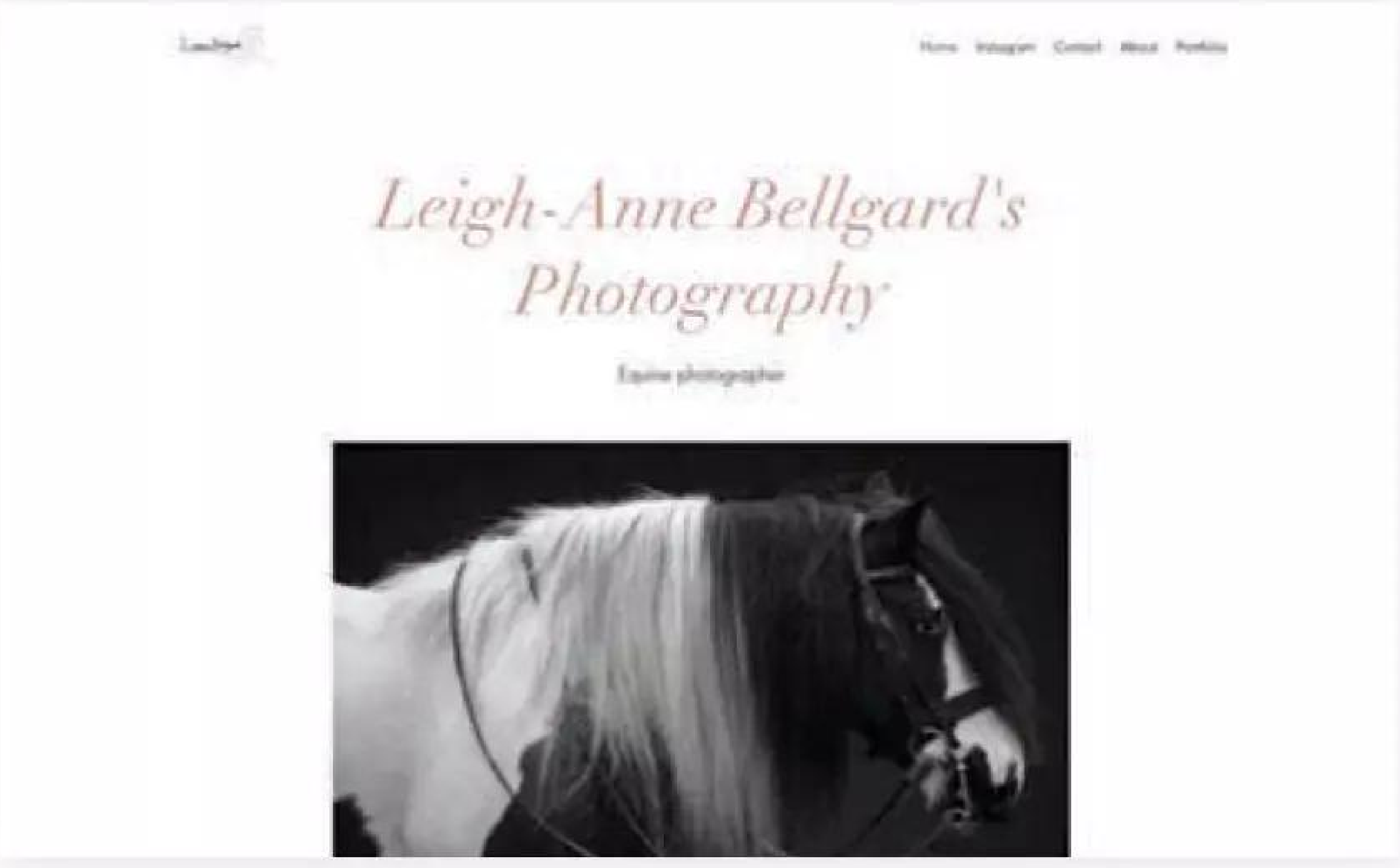
If you're looking to make money from photography, and are starting to build up a portfolio of great photographs, then you'll need a way to share your images with the world. And of course, you can set up a Facebook page, but to add an extra level of professionalism, a website that showcases all your work will be the best way to go. For that you'll want to find the best website builder for photographers.

In this guide, we'll show you some of the best options available to share your photography. Websites that are designed to show off your photographs don't have to cost the Earth and will always look far more professional in comparison to simply having a Facebook page.

When it comes to setting up an online portfolio, there are several websites that are set up specifically for photographers (and artists), and no doubt you'll have seen advertising for them. The best way to set up an online portfolio is to create a dedicated website for yourself, and in the past, this would have been an expensive affair, where you would have had to employ a website builder to make something for you.

However, things have changed, as you can simply pay for a website with a website-building company like WIX or Squarespace, and have them build it all for you, with a 'What you see is what you get' (WYSIWIG) interface, making it relatively quick and easy to get going. With these, you'll also be able to start selling your photographs and services, and this can quickly turn your photography into a paid job!

So, let's look at what's on offer, how much they cost, and why you might choose one over the other.



Leigh-Anne Bellgard's Photography

Equine photographer

WIX

● www.wix.com ● From £4 per month with ads, £7.50 per month without ads

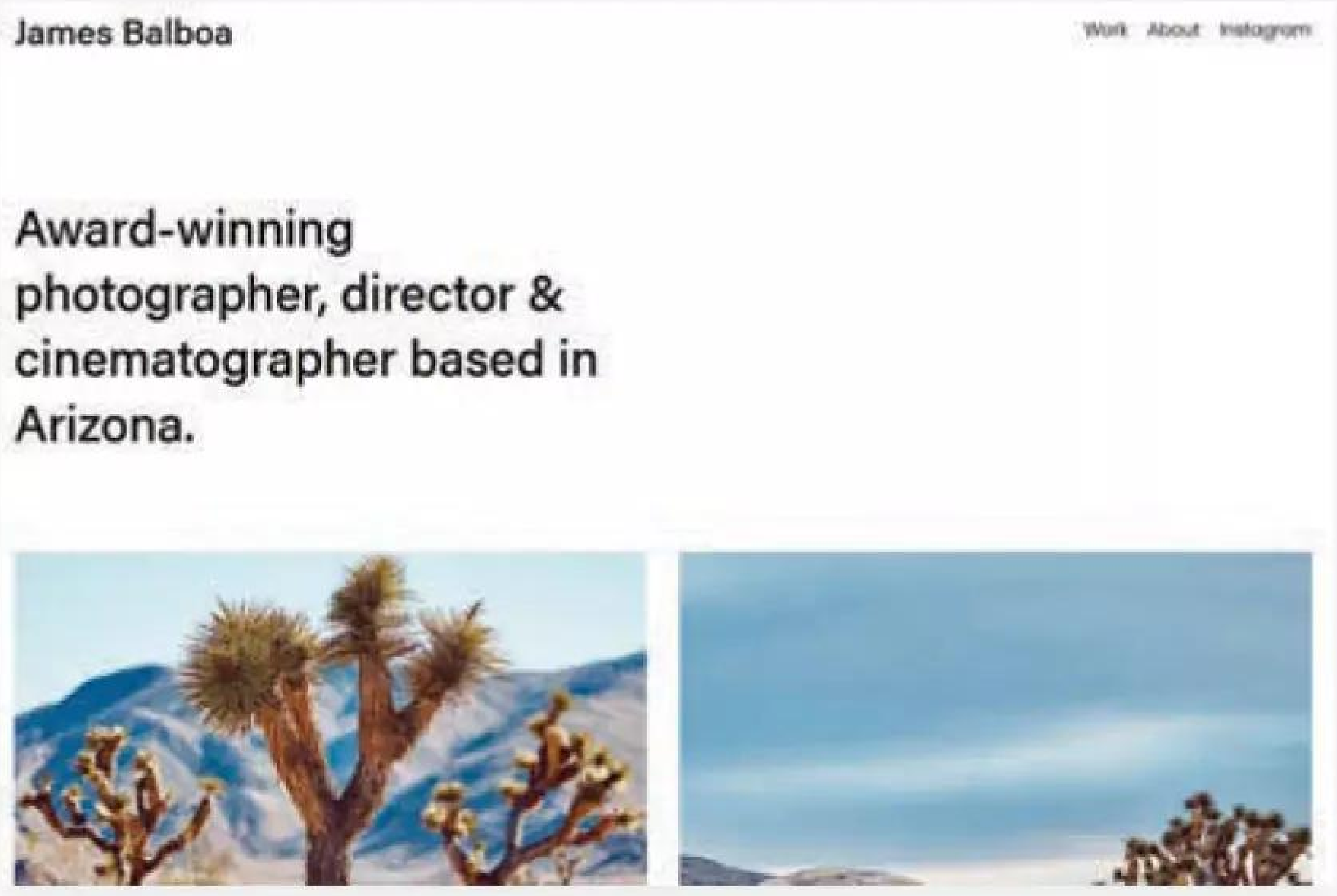
WIX is one of the biggest website builders out there and makes it extremely easy to create and set up a website. You can even use your Facebook logon to sign up.

You'll be able to customise the look of the site and if you get stuck you can pay for additional support.

The company makes it easy to set up different sections, such as a portfolio, photo albums you can share with clients, pricing plans, a blog, events, and more. In terms of features, WIX is one of the best.

For many people it will be overkill, and the sheer number of options and settings may be daunting for those who aren't tech-savvy.

You can set up a free website, but if you want to start selling, you'll need to upgrade.



James Balboa

Work About Instagram

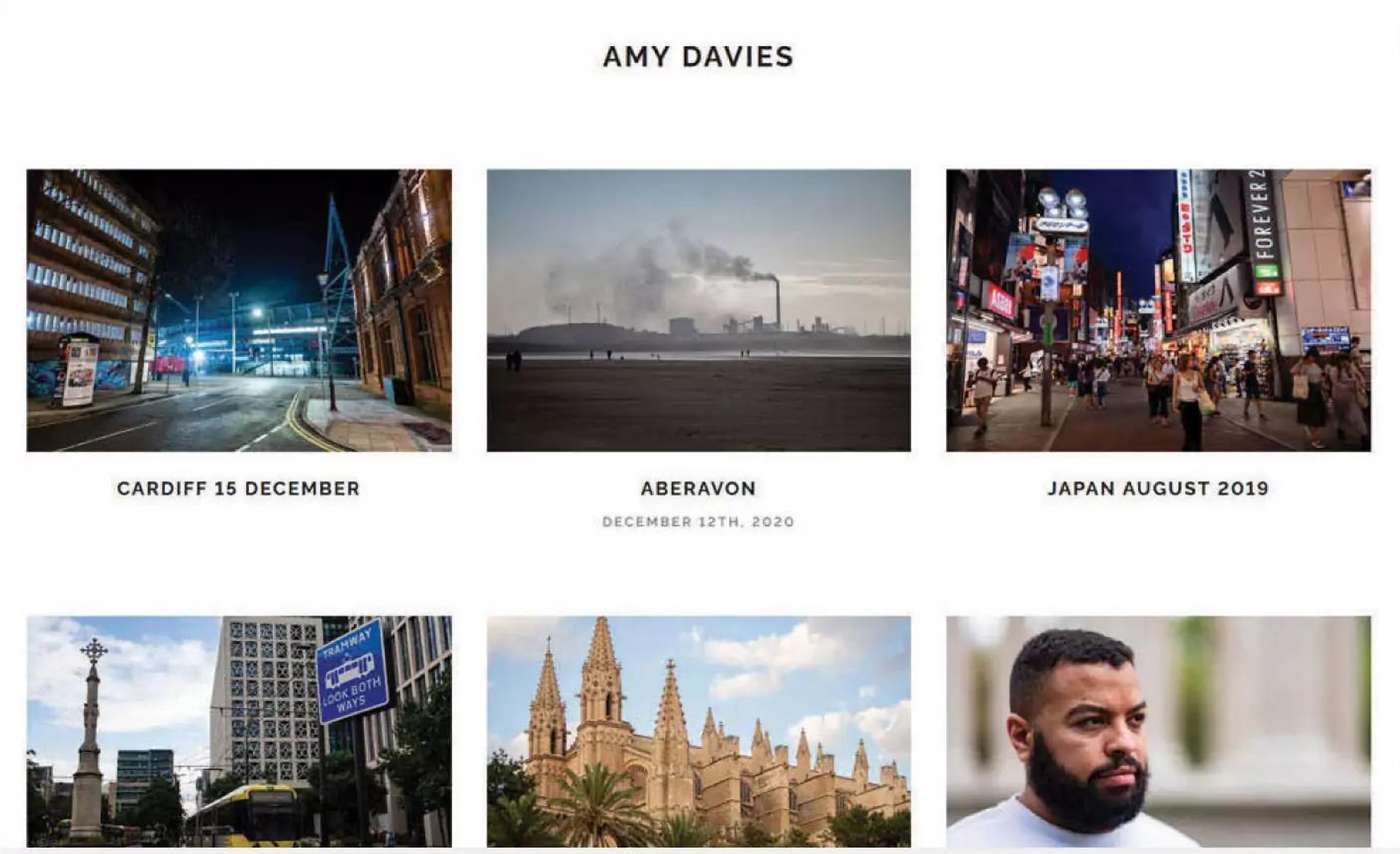
Award-winning photographer, director & cinematographer based in Arizona.

Squarespace

● www.squarespace.com ● From £10 per month

Squarespace is another big player in the website-building world, offering sites to suit businesses, retailers, photographers and more. You can quickly set up a portfolio with Squarespace, and there are a number of good-looking templates available to get you up and running. You can log on with your Google account.

You can start designing your site for free, but you'll need to pay after the 14/21-day trial period runs out, and should you need it, Squarespace offers 24/7 support. There's also a page that gives details on how the site can be used by photographers, and it has numerous specifically designed templates to choose from. As a result, it's a popular website builder with image-makers.



Pixieset

● www.pixieset.com ● Free option, with packages starting at $8 per month

Pixieset offers a nice gallery of photographs, so you can organise your photos into albums, displaying them in exactly the way you want. You can also use the site as a means of sharing your images with clients, allowing them to download a gallery of photos you've shot. This is managed securely with you sending a download code to the person you want to share the images with.

Even with Pixieset's free account you get a lot of features, including the opportunity to create unlimited albums, as well as sell your images. However, if you upgrade you can sell your images without having to pay a commission, as well as using your own domain name.

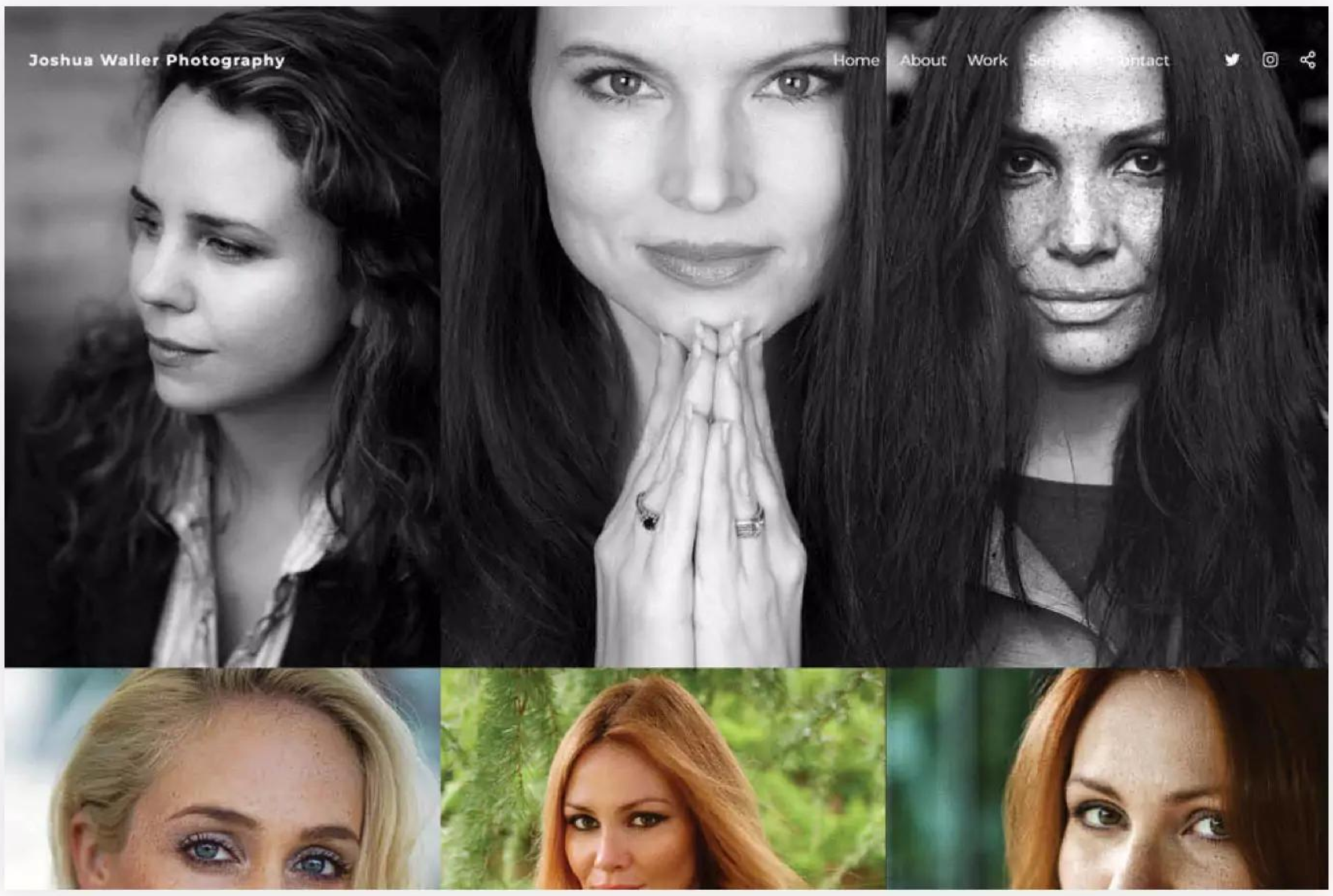
Pixpa

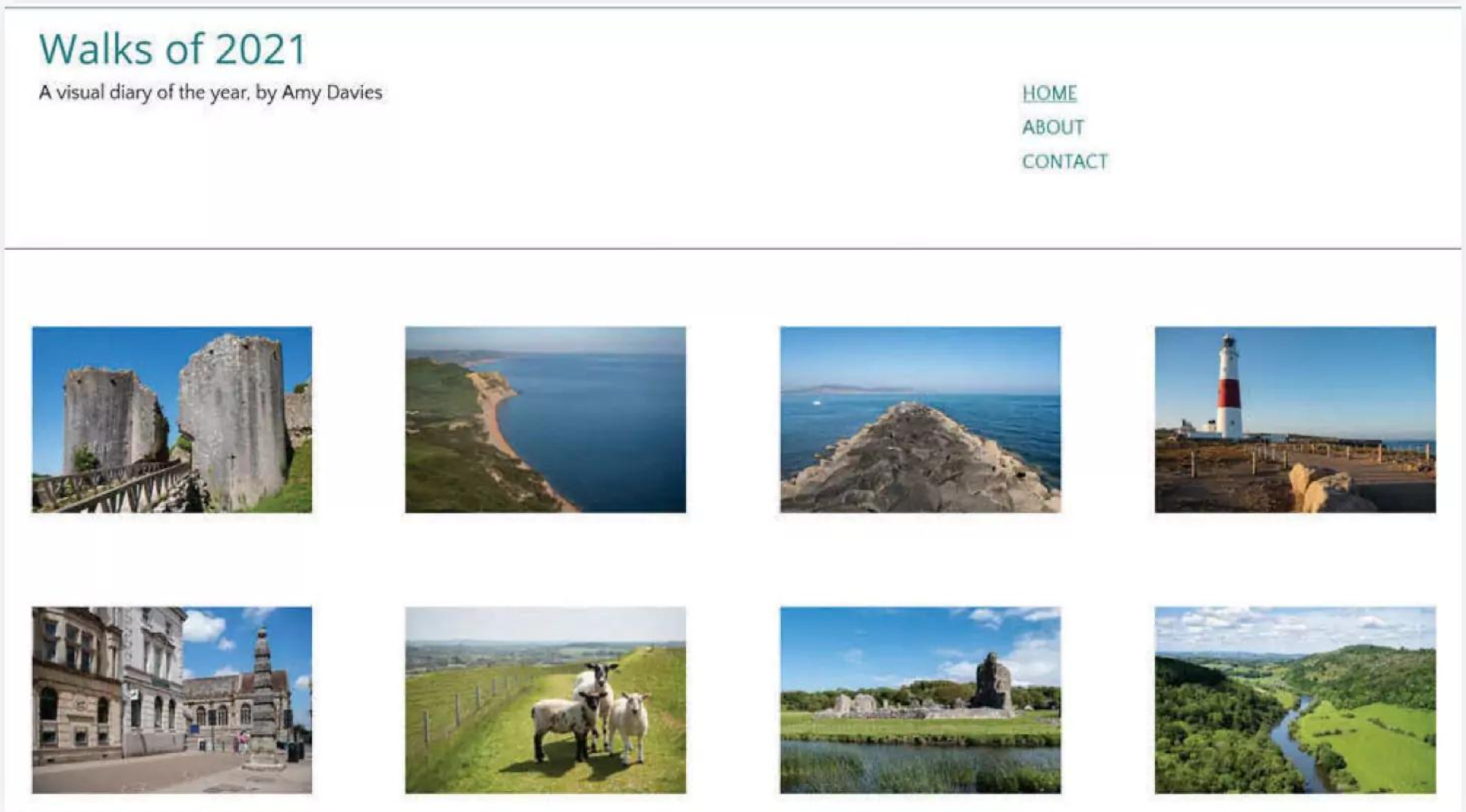
● www.pixpa.com ● 15-day free trial, then £4.53 per month

Pixpa gives you a free 15-day trial, and you can sign up using your email address, or sign in with Google or Facebook. It offers a range of templates designed to showcase your photography and most of these have modern and stylish designs.

While not as quick and easy to use as Weebly, there are some good options, and the template has everything you should need straight from the beginning, leaving you to simply fill in your details and upload your images.

With more content on display, it can take a little longer to get set up, and the 15-day trial means you can see if you like the design or not, before deciding whether you want to pay for it. You'll need to pay for the upgrade before you can start sharing the site with other people.

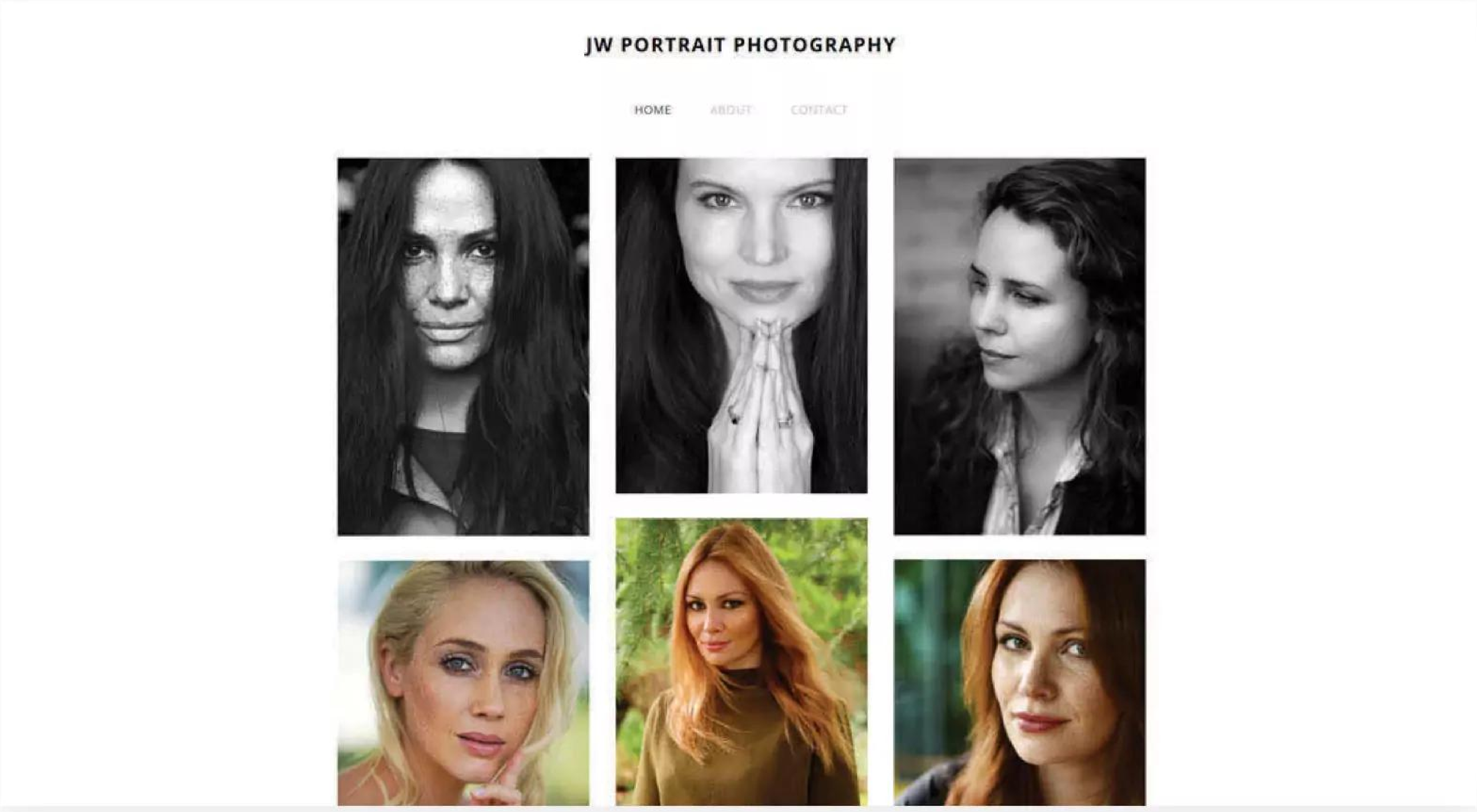




WordPress

● www.wordpress.com ● Free option (with ads), plus £3 per month plan (annual plan)

WordPress is used worldwide by a large number of people. In fact, several big websites run on WordPress, and you wouldn't even know it. However, it's also a great option for people who want to share images, as well as stories and text to go with them. The example shown left, 'Walks of 2021' includes short stories about the photos taken. While WordPress might not be the most obvious choice for creating a photography website, there are numerous templates, often with a focus on displaying images in a pleasing way, making it a good choice for photographers.


JW PORTRAIT PHOTOGRAPHY
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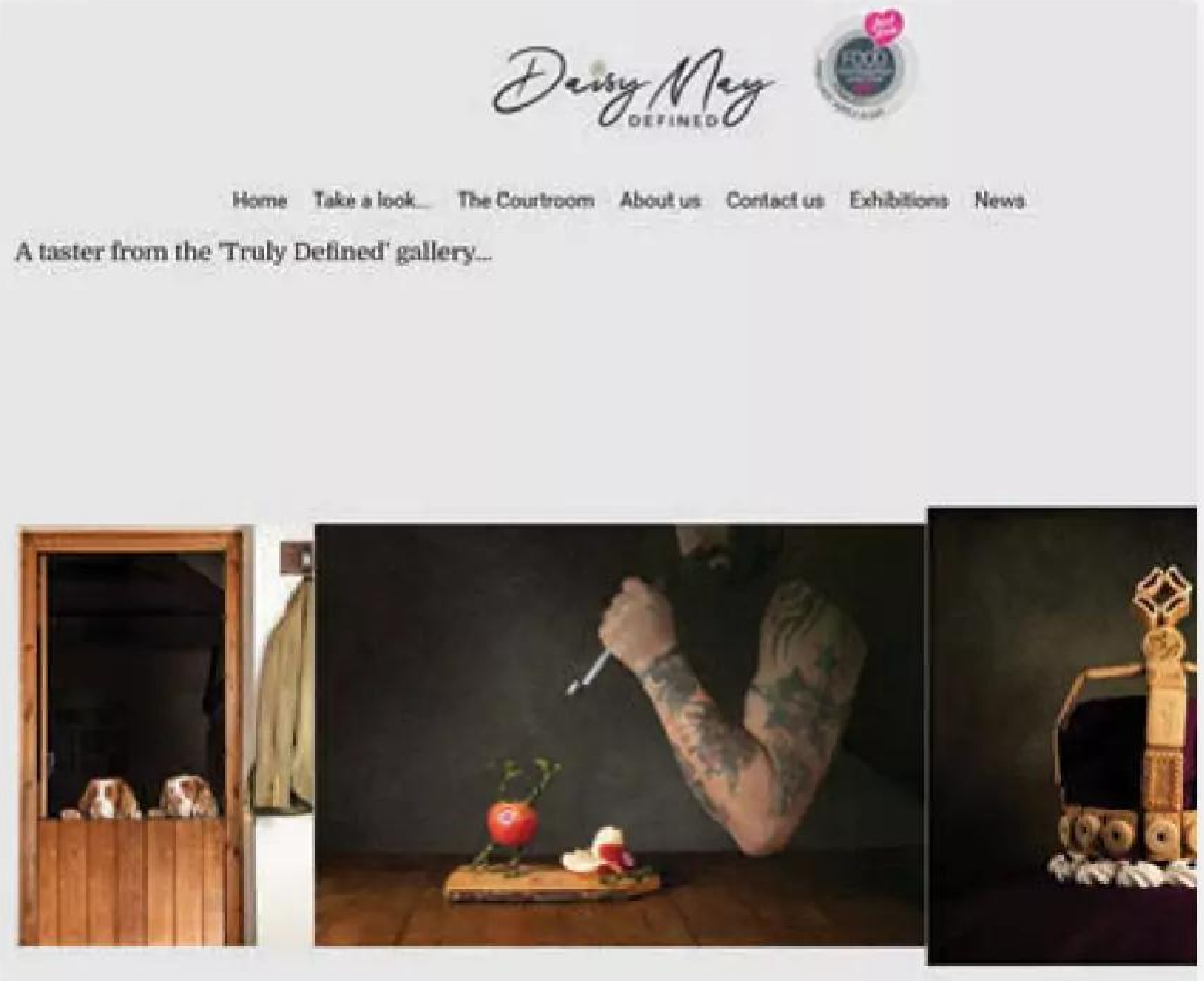
Weebly

● www.weebly.com ● Free option (with Weebly banding), or from £4 per month (annual plan)

Weebly is an extremely quick and easy website builder that lets you very quickly set up a site that looks good and can be customised with your own images. You can use it for free, and there is very minimal company branding.

If you want to use your own domain name, you'll need to pay for this, from £4 per month. To sell your images or other goods, then you'll need to go for a paid option (from £9 per month). If you simply want to share your images, then the free option will let you do this.


Daisy May DEFINED
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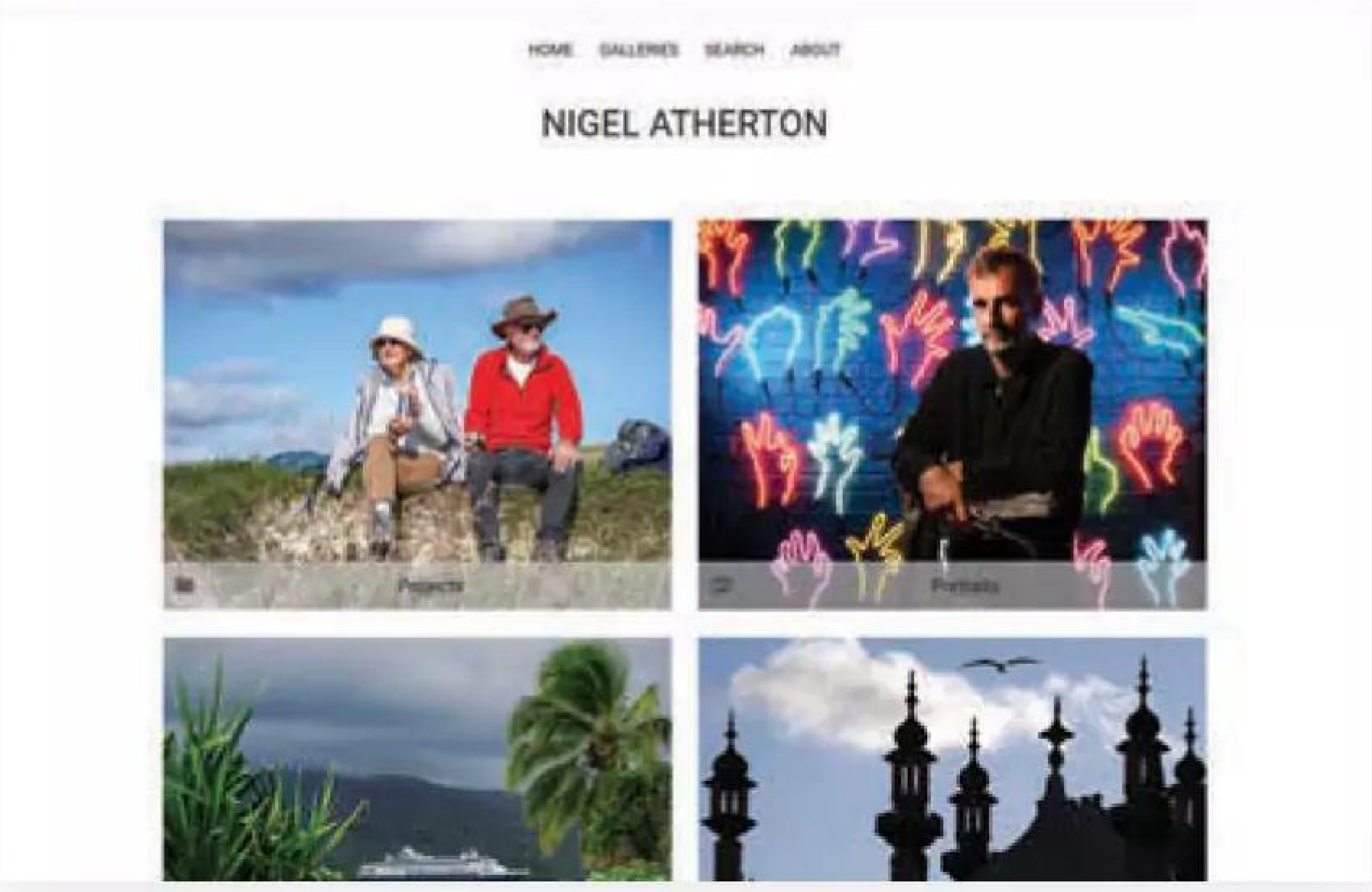
A taster from the 'Truly Defined' gallery...

SmugMug

● www.smugmug.com ● 14-day free trial, then options from $16 per month

SmugMug offers an easy to set up free trial (for 14 days), but prices are quite high after this. The site offers a range of stylish templates that are made for photographers to show off their work.

It also offers unlimited, full-resolution storage when you do go for the paid option, making this a good option for those looking to back up their photos online.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GALLERIES
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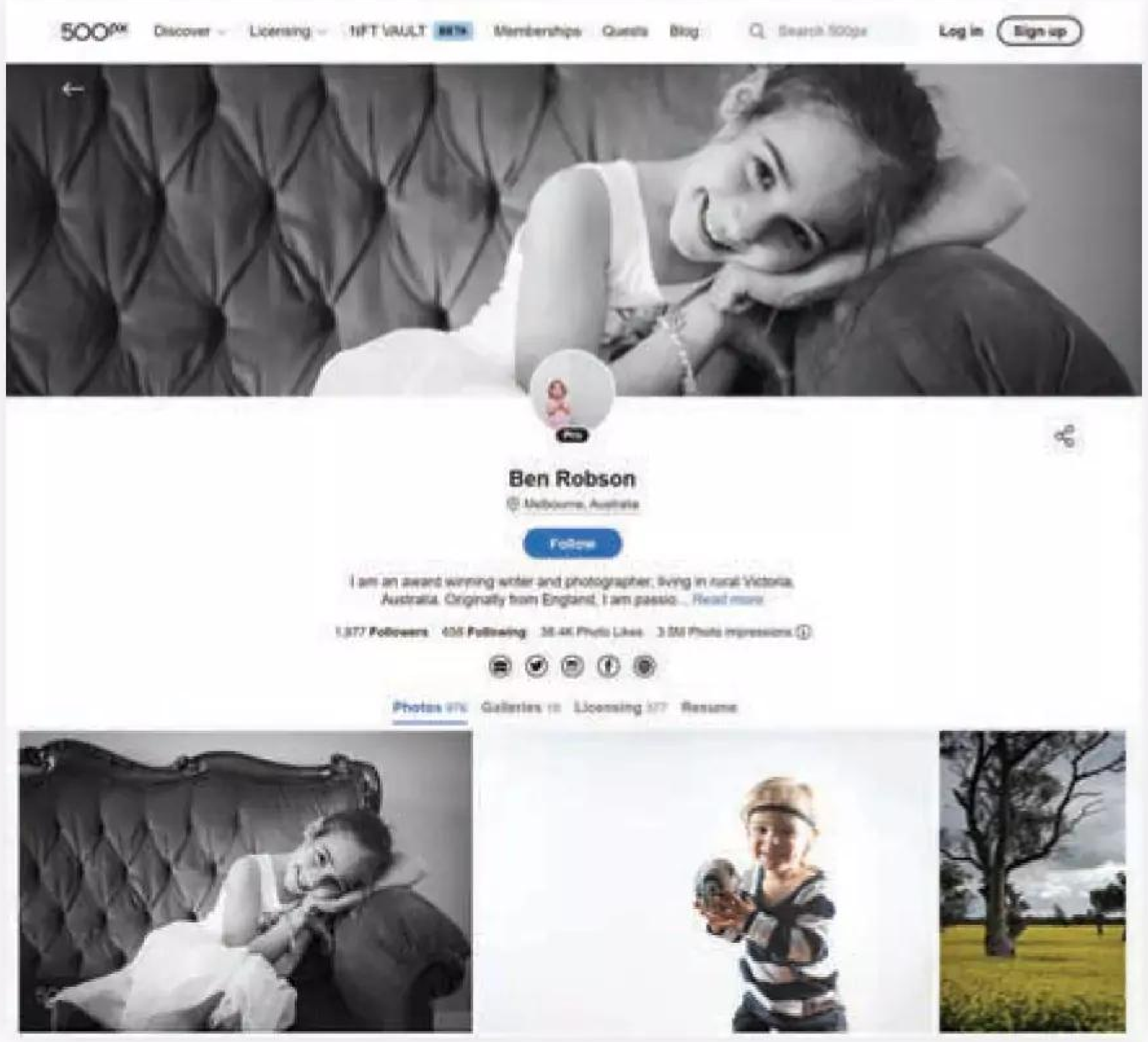
NIGEL ATHERTON
Projects
Portraits

500px

● www.500px.com ● Free option (21 uploads per week), from $4.99 per month (yearly plan)

500px is a combination of photography community and photography portfolio. You can share your images with the world but being on 500px means you're very much part of the community, too. This way, you can share images and get feedback from other photographers, as well as be inspired by others.

To set up and publish your portfolio, you will need to upgrade to the Pro account, and you can earn money from your images, through royalties from licensing them.


500px
Discover
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NFT VAULT
Memberships
Quests
Blog
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Ben Robson
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MORE ON SETTING UP AN ONLINE PORTFOLIO WEBSITE

An important note on paid websites: You'll need to continue paying them if you want your website to remain online! So, the difference between free options, and paying $16/month (or more) for the next 10, 15, or 20 years can soon add up.

Domain names cost money so once you've bought one, you'll need to keep renewing it. If you don't renew your domain name every year, then you can quickly lose your space on the internet, and all your momentum made from handing out business cards, promoting your website, and sharing links with others will be lost.

It's easy to set up a website and then forget about it, but once you've set up your website with your portfolio, you can use this to share your best photographs with others, and share with any online communities you've joined. Make sure you keep it up to date with your latest work and remove any images that you no longer like.

Andrew Campbell

Andrew (Andi) Campbell is a landscape photographer based in the South West of the UK. His passion for photography is based around capturing wonderful landscape images how he sees them, and teaching others how to achieve the same. He offers both 1-to-1 and group workshops in the South West of England and further afield. Visit **andrewcampbell.co.uk**

Night life

Don't have a powerful telescope or pricey astrophotography gear to shoot distant galaxies? **Kingsley Singleton** talks to Andi Campbell to find out how you can still get memorable shots of the Milky Way

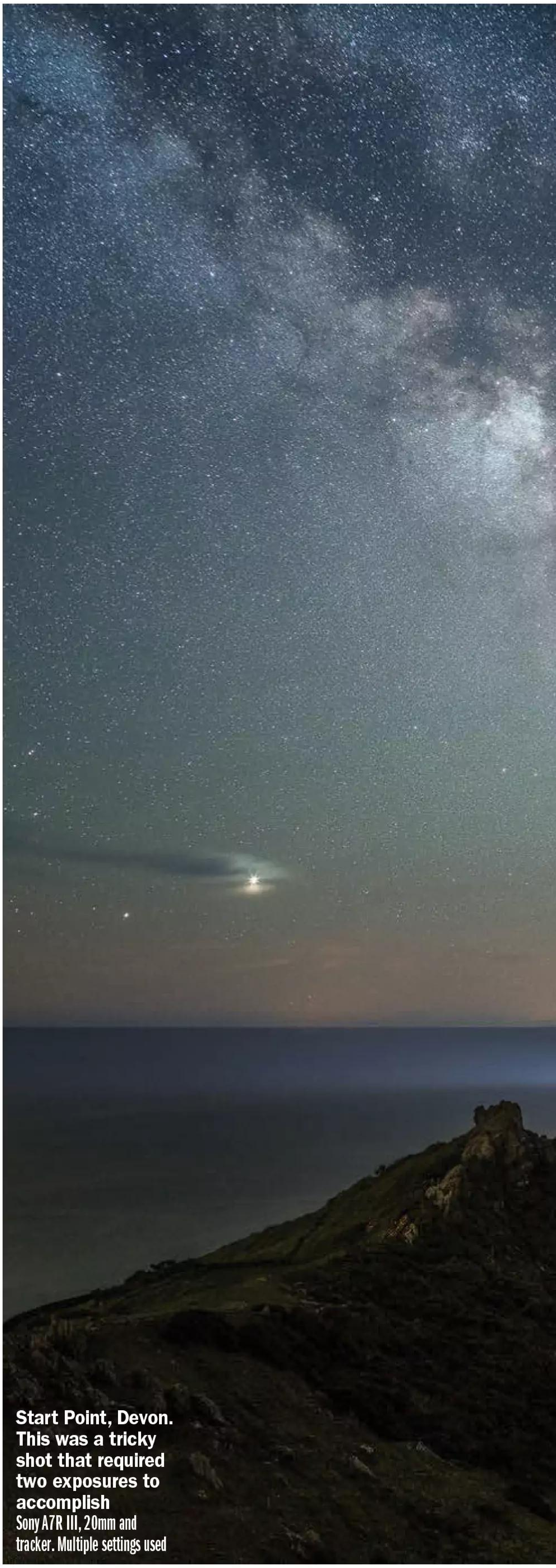
It's about 2am in the middle of May 2021 and Andi Campbell is framing an image of Start Point lighthouse under a sky full of bright, beautiful stars. Astronomical twilight, the last phase of illumination in the sky, ended two hours ago, plunging these cliffs into the deepest darkness and its first glimmers won't reach over the eastern horizon for another 40 minutes. Dawn itself is three hours distant. This is truly the dead of night.

Above him, the Milky Way makes its slow grand spin through the sky, echoed by the lighthouse beam as it circles out to sea. Just a stone's throw from the South West Coast path in Devon's South Hams, by day this is a popular attraction, and at night, as you'd expect, deserted. But not entirely.

'One of the things I enjoy about astrophotography is the solitude,' says Andi, 'but at times being alone in the dark can play tricks on you. You can't get away from all those myths you were taught as a kid. So, when I'm on Dartmoor, something in the back of my head will have me thinking of 'the Hairy Hands' or the 'Beast'. But the only time I have ever been really caught out was on that night at Start Point – and it was by a lamb! I call him the ninja lamb because he somehow managed to creep up behind me and bleat right in my ear. I really did jump and it wasn't great because I was on the edge of a cliff, but thankfully, I didn't go anywhere and nor did my camera!'

So why would anyone want to shoot in such conditions? For this, Andi has a compellingly simple answer. 'I am literally in awe of the night sky,' he admits. 'Where I now live in Devon, when you get a clear sky, you can easily see the Milky Way with the naked eye. And it has fascinated me ever since I was a child. I'm not an astronomer and I couldn't tell you the name of every constellation, but I'm passionate about looking up

ALL PICTURES © ANDREW CAMPBELL, EXCEPT WHERE STATED



Start Point, Devon. This was a tricky shot that required two exposures to accomplish
Sony A7R III, 20mm and tracker. Multiple settings used

ANDI'S KIT LIST

Sony A7R III and A7 III

Both are brilliant, perfect for my needs and I've never shot with anything but mirrorless. I prefer the A7 III for my nightscapes, because it's the same size sensor, but with a lower resolution, so noise performance is better, and it gives me a cleaner night image.

Sony FE 20mm f/1.8

Small, light, sharp and fast, this is my go-to lens for astrophotography. I also use a 16-35mm f/4, 50mm f/1.8 and a 70-200mm f/2.8 in many of my night shots.

Kingjoy SolidRock C83

All astrophotography relies on a good tripod, even if it's in conjunction with a star tracker. I use a carbon-fibre Kingjoy SolidRock C83 which is nice and light, making it easy to carry.

Remote release

Just as important for astrophotography as it is for regular landscapes, a simple remote release keeps your hands off the camera, reducing vibrations as you begin an exposure.

Filters

Most filters aren't useful for astrophotography, but there are several which can be of use. Some cut out light pollution or increase contrast in the sky, but don't forget a grad! Several times I've used them in reverse to dull down brighter foregrounds.

Warm clothes

You might feel warm while hiking to a dark sky location, but there's plenty of standing around in astrophotography, so you'll get cold fast if you don't wrap up properly.

Batteries

Working at night in the cold will drain battery life, so take a spare for anything you're relying on. Not just for the camera, but for your head torch, or a powerpack for a star tracker. It's also worth keeping batteries close to your body to keep them warm to stop them dying.

and seeing what's there. It's something that fuels the imagination and makes you think about what's beyond our own little speck. That's what makes me want to shoot at night and try to capture what I'm feeling.'

Aside from things that go 'baa' in the night, there are plenty of other complexities, Andi says. 'For one thing, when you're passionate about shooting at night, you turn your lifestyle on its head. Even regular landscapers getting up pre-dawn or having late nights aren't generally going to bed when the rest of the family are getting up! But with a subject as inspiring as this, the process and the results are worth it.'

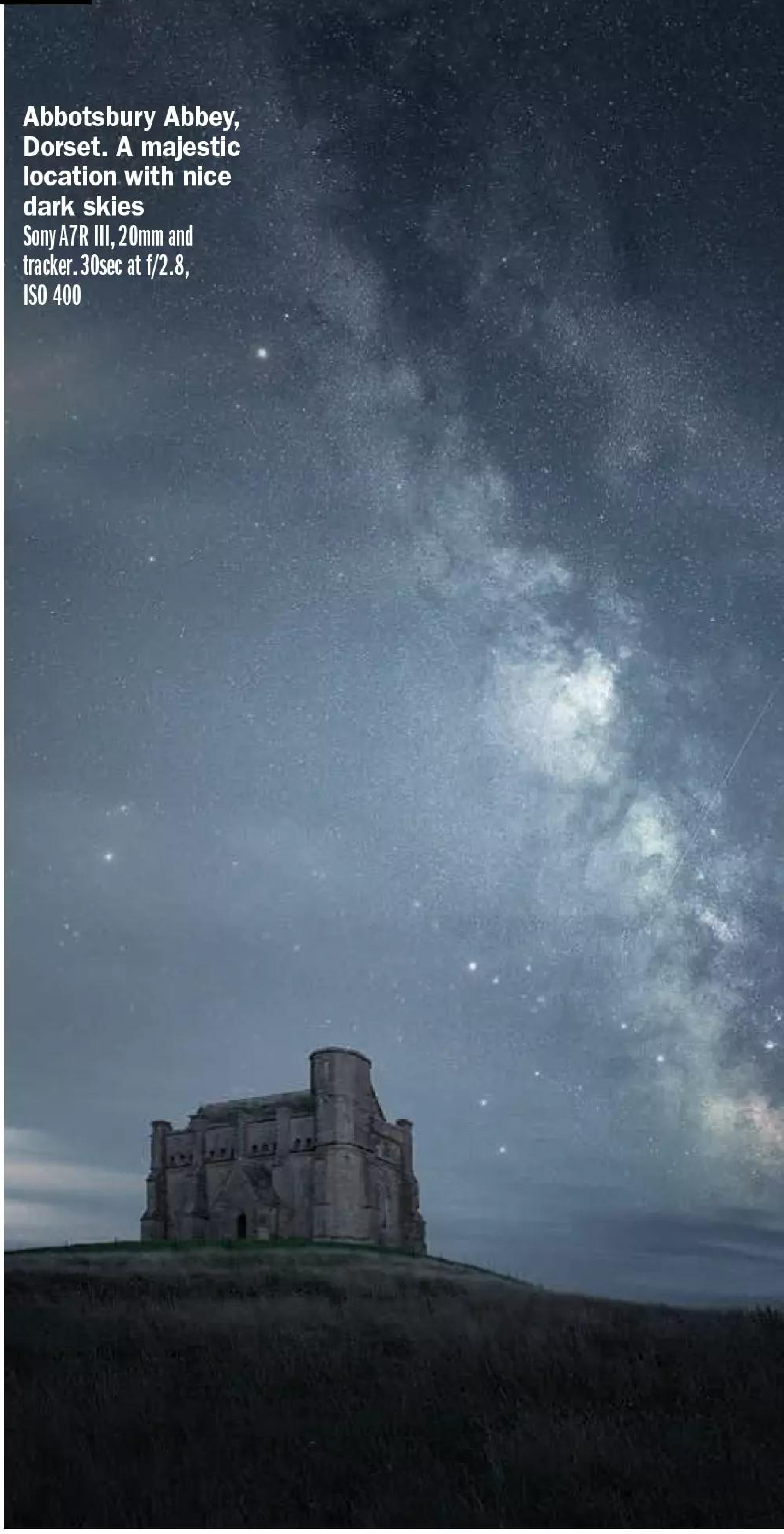
In fact, as anyone who's had even limited success shooting the night sky knows, photography can be a way of improving and growing a love for the stars. Stars or aurora are often far clearer through creative exposures than with the naked eye, and that's something Andi is both drawn to and respectful of in his astrophotography.

'What I want to do,' he explains, 'is make images that are as close to nature as possible. And that really forms my approach. I'm not trying to upstage the universe! There are huge technical challenges even in my kind of astrophotography – and in fact one of the pleasures is learning new skills and mastering the problems – but I never want to create something that's too far from what I'm experiencing. That goes for shooting "deep sky" objects, too, where you have highly magnified views of nebulae and galaxies. Those images are amazing, but I'm more interested in how the night looks to my own eyes.'

As well as exposure, which we'll come onto later, a large part of Andi's approach comes in his compositional choices, a blend that follows traditional landscapes in the balance of sky and foreground. 'Just because it's at night, the elements of a scene still have to complement each other,' he explains, 'and what I want is for viewers to look at the subjects in my nightscapes and then be impressed by what's behind them.

'That said,' he continues, 'what's a good foreground in the light might not necessarily be one in the dark. There are elements of a traditional landscape foreground, which might not even be visible without the sun to pick them out. So, I look for bold subjects and tie them in with the sky. There are a lot of buildings in my shots, lighthouses, abbeys, and that sort of thing, which stand out better in a night-time photo than it would in the day. In fact, many of them would be unremarkable in daylight. And even with sites like Stonehenge, the night sky makes them look far more exciting.'

Another aspect of shooting nightscapes that Andi is keen to stress is the difference between a human perspective and the view of a typical wideangle lens. Composition is therefore rewarded by practice. 'Your eye is closer to a 50mm lens in


Abbotsbury Abbey, Dorset. A majestic location with nice dark skies
Sony A7R III, 20mm and tracker. 30sec at f/2.8, ISO 400

SIX ASTROPHOTOGRAPHY MYTHS BUSTED

1. Clouds are a problem

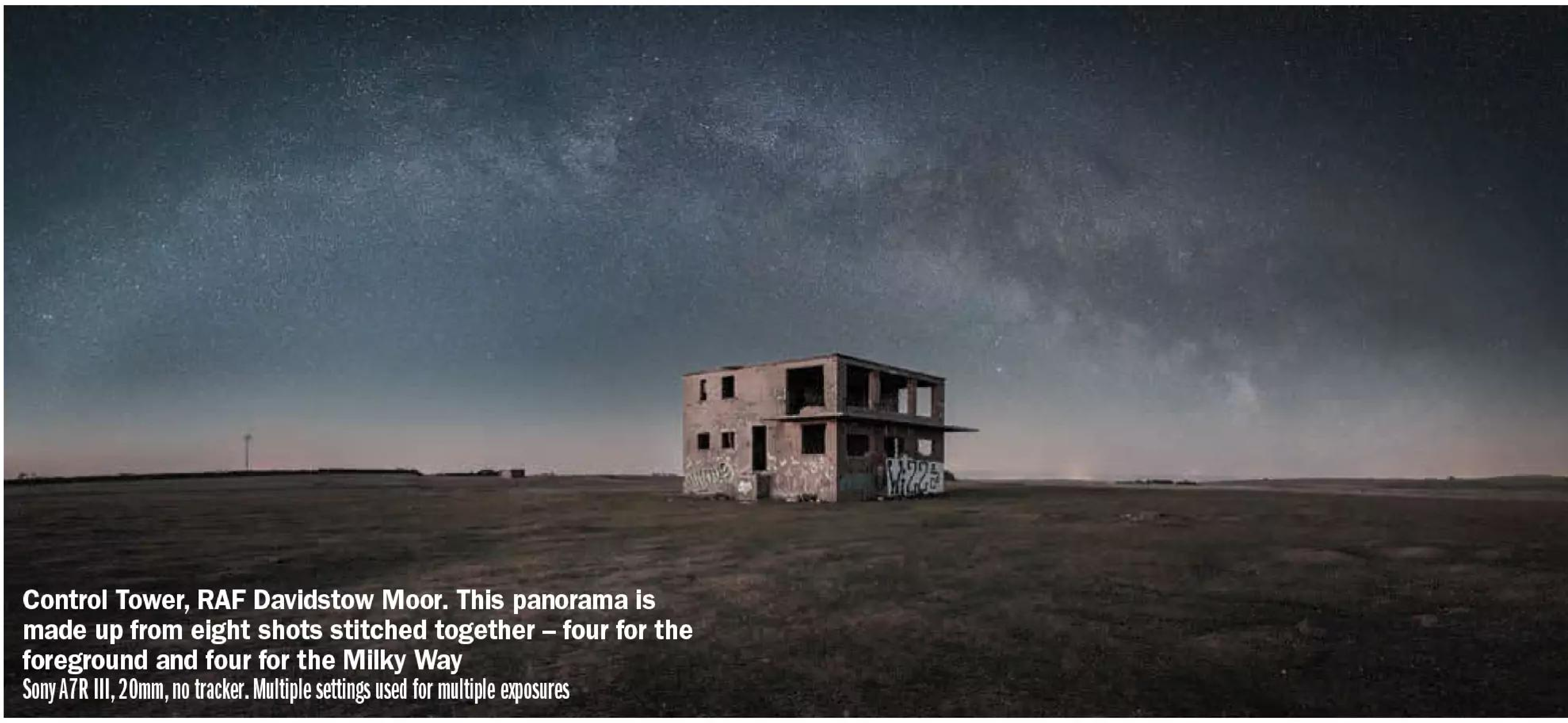
Don't restrict yourself to completely clear nights. Some light clouds can add a beautiful atmosphere to nightscapes and might frame stars in the night sky nicely. Anything more than 20% cover can be a problem though or mean you're waiting around.

2. Don't break the 500 Rule

The amount of motion you see isn't just dependent on shutter speed. If you're framing to the north with Polaris in shot, there's less movement than stars closer to the celestial equator. The visibility of 'spin' also depends how large or close the image will be viewable.

3. Star trackers are hard

Star trackers do come with polar-alignment scopes but these are only vital for highly magnified deep sky shots. The wider you shoot, the less accurate you need to be and most of the time you can be set up and be shooting in just a few minutes.



Control Tower, RAF Davidstow Moor. This panorama is made up from eight shots stitched together – four for the foreground and four for the Milky Way
Sony A7R III, 20mm, no tracker. Multiple settings used for multiple exposures

how it sees,' he explains, 'in that it's more selective, while the mind picks out what it wants in a scene and removes the clutter. Therefore, even though they can look brighter than what you see when shot correctly, constellations or the ribbon of the Milky Way can look a lot smaller and less impressive when shot on a lens of 35mm or wider.'

But one of the biggest hurdles for astrophotography is planning. 'With regular landscapes you can go to a location without expecting much and something might happen,' Andi explains. 'It could be a two-minute glimmer of golden light, or unexpected weather that gives a new feeling to a scene. Moving to astrophotography it's not like that at all: you've got to have a plan.

'First for me,' he continues, 'is to recce a location in daylight, working out how to frame it, and this also makes things a lot easier than stumbling around at a new location in the dark. I want to know the terrain, access and how everything is going to look. But I also need to check whether I'm in a sufficiently dark sky area. Light pollution makes it very hard to capture something good, and any town or city can be a problem as the glow reflects off the atmosphere and reduces the visibility of the stars.'

'After that, it's working out and how – pardon the pun – the stars will align. If I want to feature the Milky Way as I often do, I need to know where it's going to be in the frame at the time of night I'll be shooting. For that I use an app called Stellarium, which you can get on desktop or phones. My favourite seasons to shoot the Milky Way are between March and May, and then around August to September. Between those times it gets too bright at night and in the winter months the northern hemisphere has rotated away from the brightest parts being visible.'

It's also important to avoid the moon at its brightest as that too will lower the visibility of the stars, says Andi. 'That said, I have had success when a bright moon is directly behind me, as it helps light my foreground subjects. After that,

4. Do it all in one shot

I often make multiple exposures to create one image. For instance, in very dark places, an exposure for the foreground could be four minutes with a smaller aperture, while the one for the sky might use a higher ISO, wider aperture and a shorter time.

5. Any artificial light is bad

Light pollution from towns and cities reflect off the atmosphere and makes the stars seem less intense. But a few lights on or around the subject can be very useful. Just adjust your exposure so they don't dominate the sky and work in balance.

6. Fast lenses are vital

With the right technique and a dark location you may not need wide-aperture lenses. F/2.8 to f/4 is one stop of light and you won't add much noise if you go from 3200 to 6400 ISO on a modern camera. Just don't push it hard in post or you'll amplify the grain.

Andi's top tips for astrophotography

Get there early

Plan your shoot so that you're on location in good time, and don't have to rush. On a clear night at the right time of year and knowing in advance the location and where the Milky Way will be, you'll have a good hour of shooting time to enjoy it.

Make test shots

When you're on location, don't think that every shot must be a keeper. You can make test shots at the maximum ISOs which can help you refine composition or check the sharpness of focus before you drop the sensitivity for the main event.

Focus manually

AF is useless for astrophotography, so switch to manual and use the magnified view on your screen. If working at very wide apertures, remember to focus separately for shots of the foreground subject and the stars.

Shoot raw

If you intend to do any post processing in Lightroom or similar, make sure you shoot in raw. Even minor changes to the brightness of the stars or foreground shadows will look superior if you're working from a raw file.

Don't fear ISO

Modern sensors are so much better at dealing with high ISOs, but it also helps knowing what the top level is that you're willing to shoot with. Some pre-shoot test shots can help with this but expect to be using settings like 1600 to 4000.

Keep at it

Astrophotography is an exacting subject, dependent on many things, and with lots of technical things to juggle. The more you do it, the more you'll learn and the better you'll get, but the most enjoyable thing is witnessing the night sky, so no trip is ever wasted.

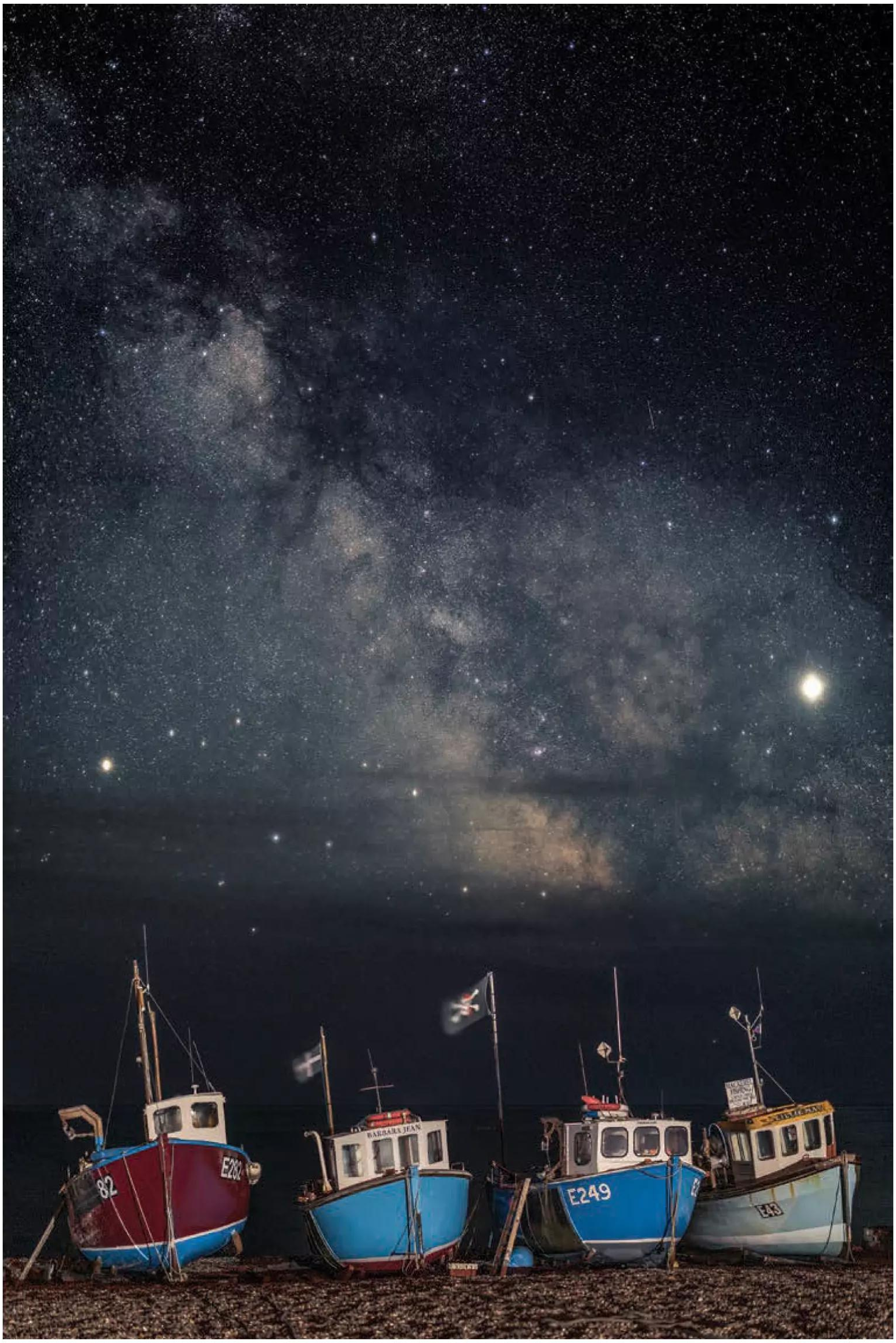
it's down to getting clear weather, but even if cloud cover was around 20%, I would still go out and shoot as it adds some natural interest to the sky.'

When it comes to exposure, astrophotography is technically demanding. 'Shooting at high ISOs like 1600 or 3200 for 20 or 30secs is the norm for me,' says Andi, 'and though it's informed by many other things – for instance sensor size, resolution, print size and how far from the north star you are – the exposure time you can stretch to without the stars themselves forming streaks of light, is generally governed by the "500 rule". Take the number 500 and divide your lens's focal length by it to get the exposure time; a 24mm lens would suggest about 20secs.

'I'll also often shoot separate exposures for the sky and the landscape,' Andi continues, 'making sure I have both as I want them, and mask them together in post. Sometimes I'll add light to the foreground, but it's very rare as I don't want anything to look unnatural. There have been a couple times a car has driven past, glanced its headlights across a building and unexpectedly lit up the scene, in a

Right: Space Pirates, Beer Beach, Devon. A single exposure using a medium graduated filter upside down to control exposure
Sony A7R III, 50mm, 8sec at f/1.8, ISO 2500

Below: Druid Delight, Stonehenge. The misty conditions added to this amazing scene
Sony A7R III, 28-75mm, 15sec at f/2.8, ISO 2000



nice soft way! You can do similar with a head torch, but I would rather extend my exposures for the foreground.'

Only a little more complex but opening the potential for even longer exposures is using a star tracker, wherein a correctly aligned camera can be rotated throughout an exposure, keeping pace with the turn of the Earth and therefore capturing stars without trailing. It also opens up the use of smaller apertures and lower ISOs.

'I use a tracker 50% of the time, but the subject has to warrant it,' says Andi, 'and in sufficiently dark spots and good weather it's not required. Post production is also more complex as terrestrial details will be spinning around the shot, while the stars remain static. So even if you shoot a regular locked-off foreground, combining them can show shifts in where the subject is supposed to be. Therefore, simple subjects make sense – such as a view out to sea with a straight horizon.'

Some nightscape photographers accept the complexities of tracker shots and shoot separate frames of their foreground and an unobstructed night sky to make it easier, but true to his intentions, Andi's approach is a lot more natural and true to life. The same goes for his editing. 'I don't get too technical with processing and stuff like noise reduction,' he admits, 'and I pretty much do all my editing in Lightroom. I can do a lot of selective adjustments, for instance to brighten parts of the sky or landscape, but sometimes it's as simple as adding a vignette, which makes the Milky Way look brighter. I certainly don't want to over-egg anything. If you find the right conditions, nature is more than beautiful enough on its own.' AP

Win big in astrophotography

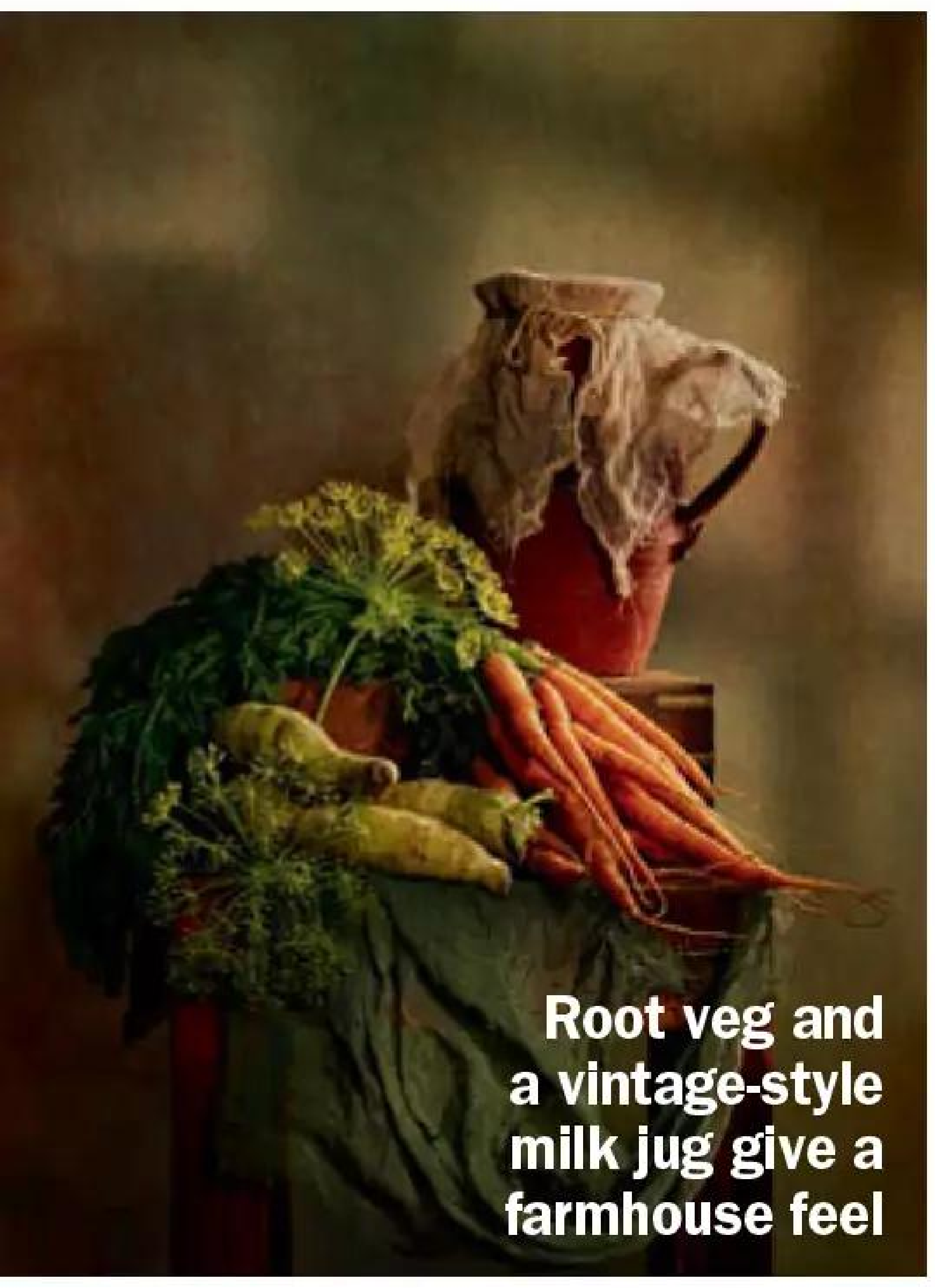
Hopefully this feature has shown that you don't need to spend the earth to get astro images that are out of this world. Why not enter your best shots into the next Astronomy Photographer of the Year competition? There is always a wide range of categories, and you can view the previous winners too, for more inspiration. See apy.rmg.co.uk

© GERALD RHEMANN

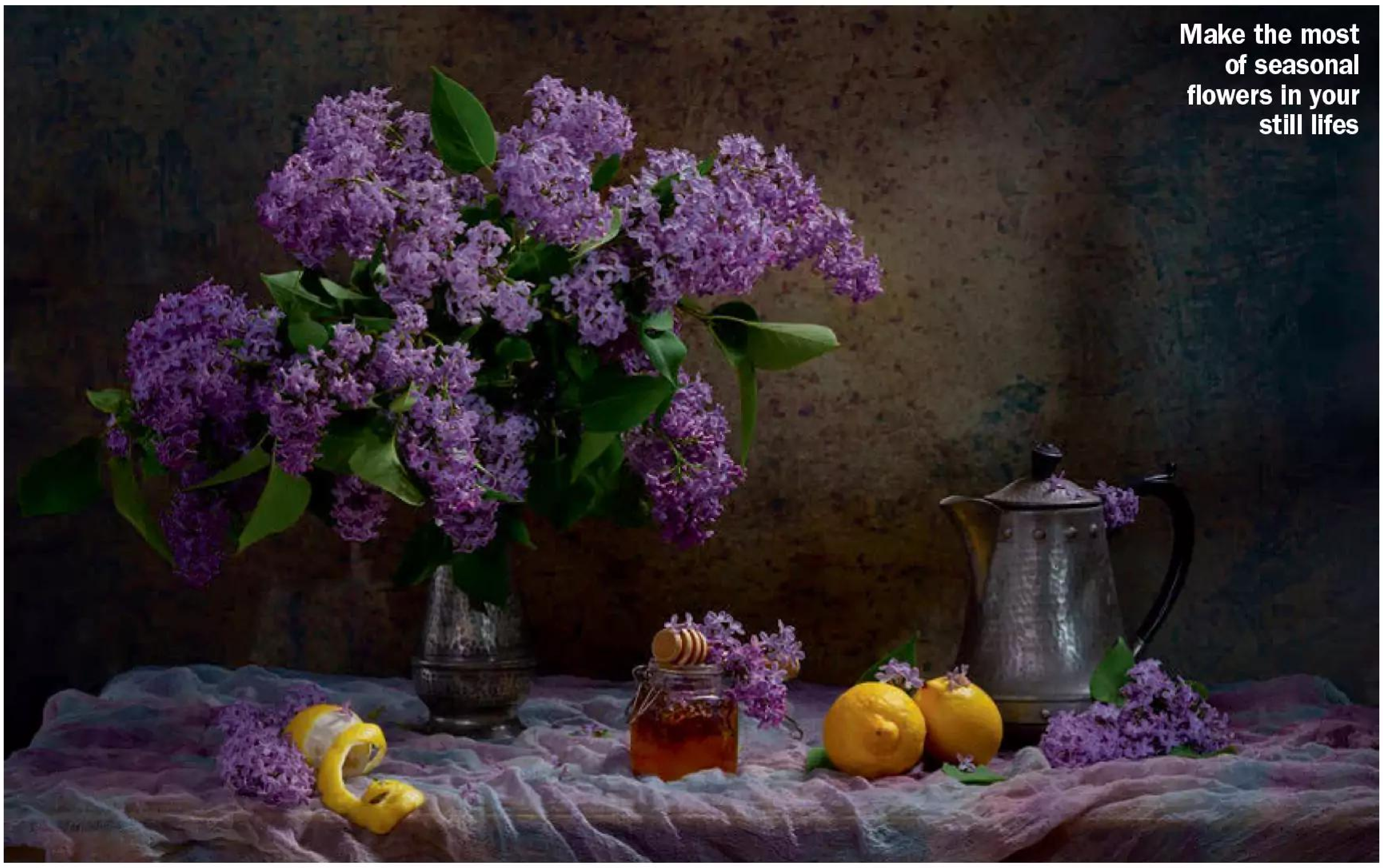
The Astronomy Photographer of the Year in 2022 was Gerald Rhemann, for this image, 'Disconnection Event'

Home is where **the art is**

You don't need a studio space full of stands, clamps and backdrops to create striking still lifes. **Tracy Calder** talks to two photographers who have made incredible images using what they find around them



Root veg and a vintage-style milk jug give a farmhouse feel



Make the most of seasonal flowers in your still lifes

PICTURES ON THESE TWO PAGES © ANGI WALLACE

Angi Wallace

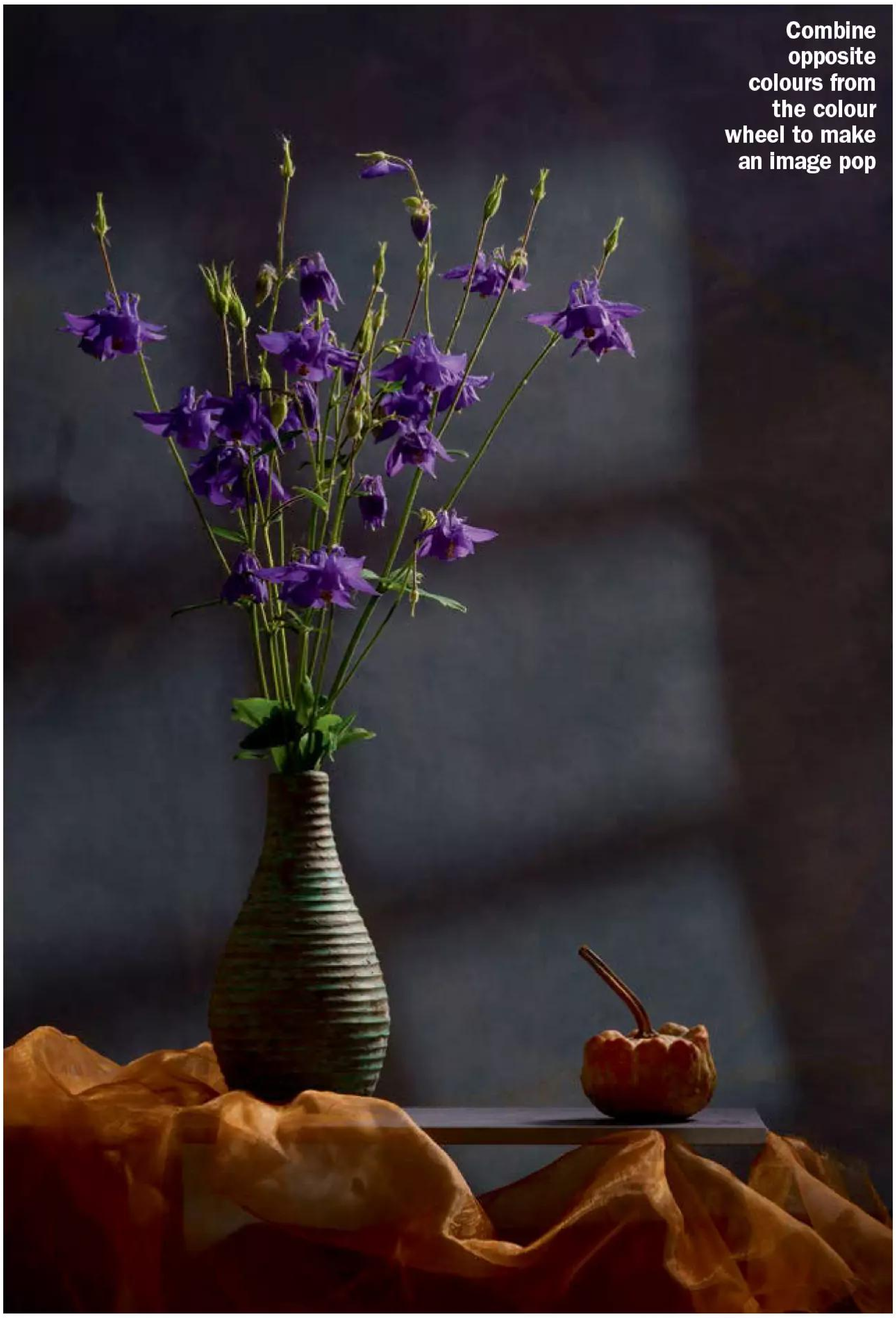
Angi Wallace is an award-winning photographer with a passion for macro, nature, creative portraiture, landscapes and gig photography. She recently turned her hand to creating and shooting still-life arrangements in her home studio. Angi's work has been highly placed in a variety of prestigious photography competitions. She won the close-up round of APOY in 2020. To see more of Angi's work, visit: **angiwallacephotography.com**

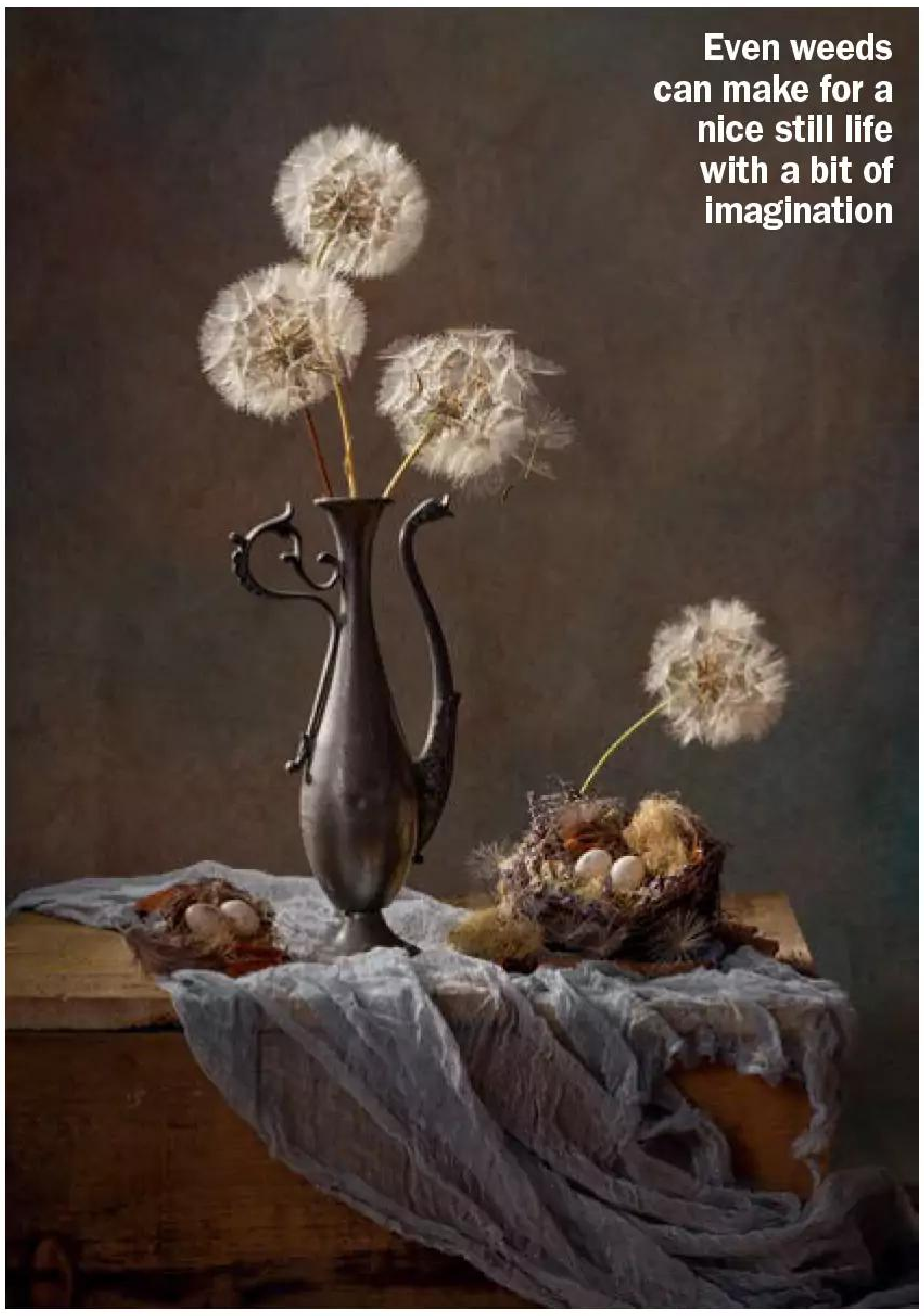
When Angi Wallace moved in with her partner, Michael, he soon discovered that he would never be eating dinner at the dining room table again. Angi commandeered the room for her photography, transforming the space into a mini studio. 'Michael asked me when I was going to tidy everything up and I said "never"', she laughs. It's hard to complain about mess when your partner wins countless awards for her creative still-life, floral and close-up work. 'We eat in the living room now,' she adds, with a smile. The basic set-up comprises a table, a series of backdrops on a pole (which Angi flips over), three lights and walls of shelves packed with vases and other photogenic props. 'You can barely get into the room now and there's hardly any space around the table for the lights,' she confesses.

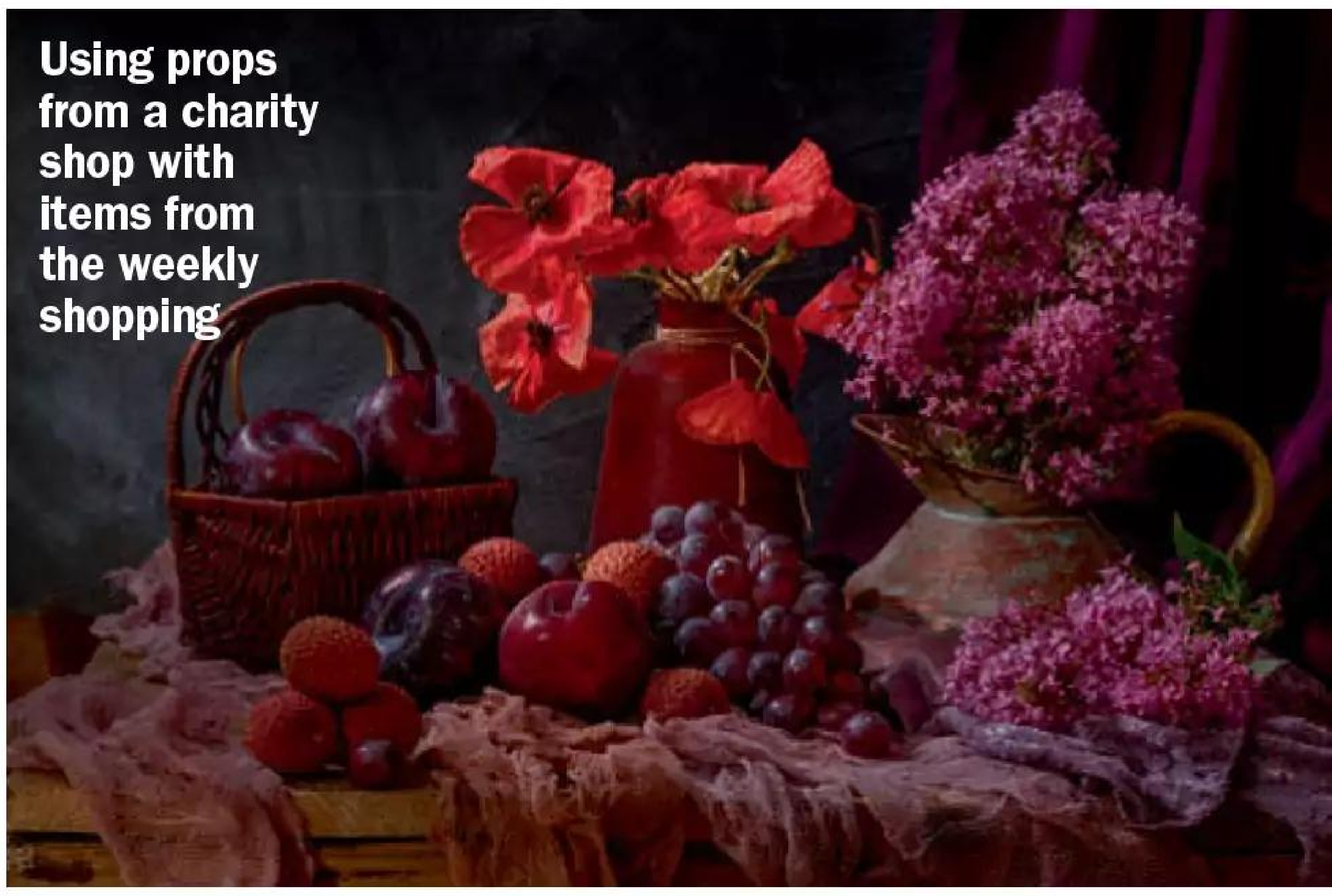
Angi studied history of art at school and believes this early training might have fuelled her passion for still life. 'I like the Old Masters, but I'm also inspired by a lot of European and Russian still-life painters,' she says. There's a lot to be gained from looking at accounts on Instagram, where people share their behind-the-scenes lighting set-ups, too. 'These can be very handy to learn from,' she says. 'The set-ups people use are very much like the old-fashioned painters.' When she started shooting still life, Angi didn't give much thought to the lighting. 'I used to position a light on either side and just point it at the subject,' she laughs, 'I wasn't very imaginative.' Now, however, she is 'obsessed' with harnessing the power of light. 'It's not just about how it hits the subject, it's about how it hits the backdrop and how it's reflected back into the scene,' she explains.

Choosing a theme

When it comes to setting up a still-life arrangement, Angi sometimes starts with a theme. 'I might decide to play with shadows, certain colours, shapes or textures,' she explains. 'I like playing around with colours that are opposite each other on the artist's


Combine opposite colours from the colour wheel to make an image pop


Even weeds can make for a nice still life with a bit of imagination


Using props from a charity shop with items from the weekly shopping

colour wheel – like purple and green.' Another tip is to use angles to guide the viewer's eye through the scene. 'You need to watch for lines when you're positioning things,' says Angi, 'and you have to be careful that elements are not just touching – they need to fully overlap or have a clear space between them. If things are just touching it looks wrong.' Angi often adds something to link the elements together – a piece of fabric, for example, which flows through the picture.

Angi finds most of her props in charity shops, but also uses eBay and Facebook. 'I'm very cheeky, and I hardly pay anything for them,' she admits, 'most of the stuff I've got cost less than a fiver!' The backdrops that help to give her work the feeling of the Old Masters are a mixture of homemade and shop bought. 'I've got some really large boards that I paint with a sponge or material,' she explains. 'I just slap paint on and spread it about!' Angi also uses cheap vinyl backdrops, 'which are handy until you make the mistake of washing them!' With the arrangement sorted and the backdrop in place, she then turns her attention to the lighting.

Light touches

'I tend to use three lights and a couple of reflectors,' she reveals. The set-up comprises one light from the back (sometimes fitted with a gridded beauty dish), another from the side (often fitted with a homemade gobo shaped like a window) and a third bounced off the ceiling to lift the shadows.

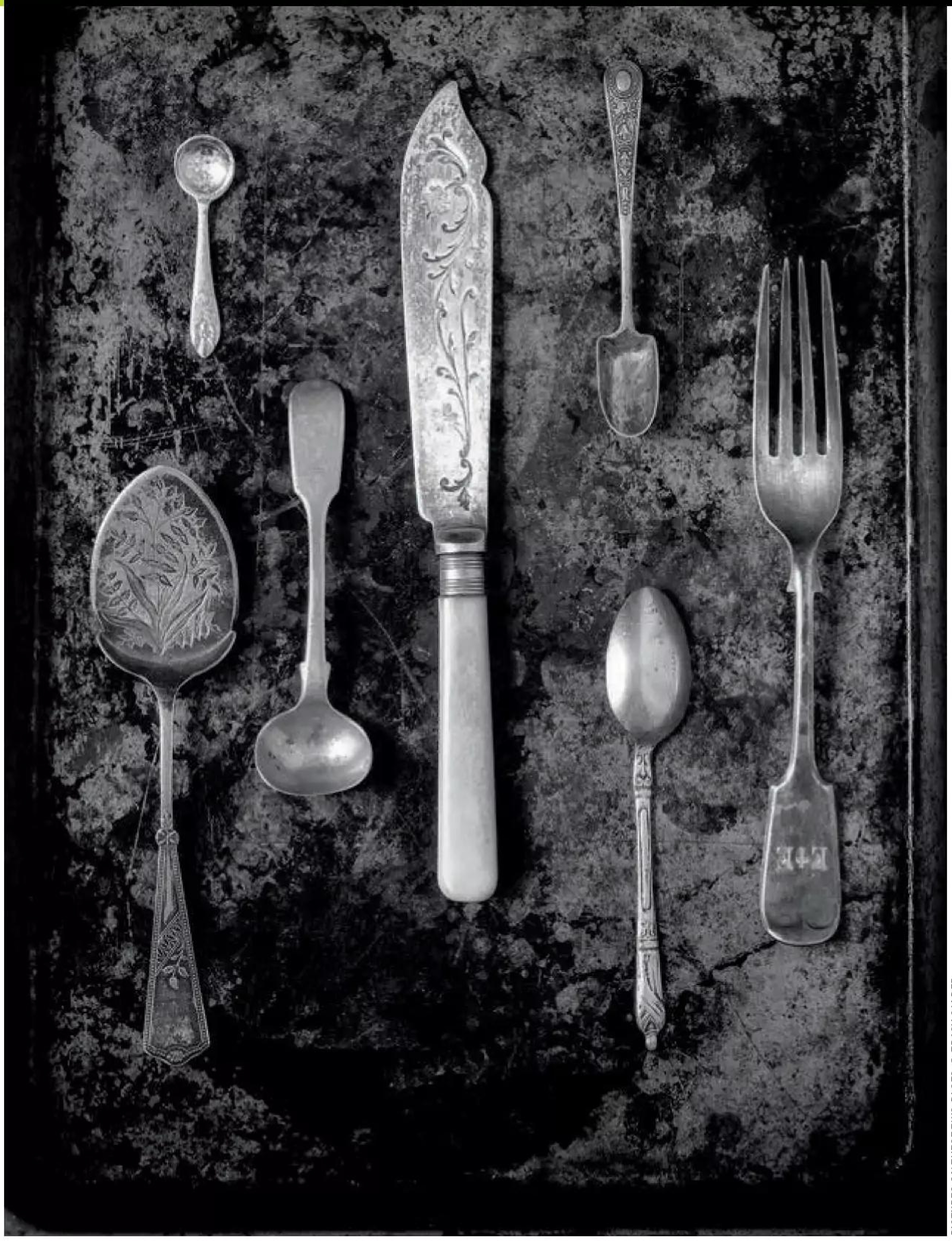
It can take hours to get the lighting right and days for Angi to be satisfied with the composition. 'I will be in and out of that room looking at stuff on the computer and going back to tweak it,' she laughs. 'What looks great on the back of the camera doesn't always look good on the computer.' This has served her well, and her image entitled 'Wildflowers' was recently awarded 1st place in the Still Life category of International Garden Photographer of the Year.

Angi's top tips

- Set yourself a challenge. 'Shooting still life pushes me out of my comfort zone, and there's still so much to learn.'

- Experiment with lighting. To begin with, Angi tried to get everything nice and even, which made things look flat. 'Play around and include shadows,' she suggests.

- Paint your own backdrops. Angi uses big boards, which she 'slaps' paint on, spreading it with a sponge or fabric.



PICTURES ON THESE TWO PAGES © TRACY CALDER

Clockwise from left:

Rusty baking trays can make great still-life backdrops

A beautiful shaft of light filters through the kitchen window

Grouping objects in threes can strengthen the composition

Think about shapes or colours in the 'negative' space

Tracy Calder

Tracy Calder is a photographer, writer and former editor of *Outdoor Photography* magazine. In 2018 she co-founded Close-up Photographer of the Year (CUPOTY) – a competition celebrating close-up, macro and micro photography. In 2022 she was awarded a gold medal from the RHS for her Plant Scars series. Her work has been exhibited at The Photographers' Gallery, National Portrait Gallery and Saatchi Gallery. **Instagram @tracy_calder_photo** and **www.cupoty.com**

Every Sunday I get up at stupid o'clock and head to my local car boot sale. Scouring the rows of broken desk fans and *Harry Potter* DVDs, I stay alert and receptive. I know exactly what I'm looking for, and it's usually on the ground covered in tat. What I'm after are old baking tins (the rustier the better), battered wooden boxes, vintage fabric and, if I'm lucky, door frames with flaking coloured paint. It's an odd wish list and one that attracts attention if I'm lucky enough to find a good haul. Most of the time I pick something up, feel a fizz of excitement, and try not to look excited as I approach the stallholder, wallet in hand. These treasures, full of story and history, are about to embark on a new life as still-life backdrops.

Find your inspiration

Painters have been drawing inspiration from still-life arrangements for centuries. Morandi, Caravaggio, Cezanne and Van Gogh are just a few examples of artists who have grouped objects in such a way that they become more than a sum of their parts. Their work can teach us so much about balancing shapes, lines and colours. What's more, each painting is a masterclass in how to use light to emphasise form, draw out texture and guide the eye into and around the frame. When it comes to photography, still life has been a popular genre since the beginning. In 1845 William Henry Fox Talbot made a print entitled *A Fruit Piece*, featuring baskets of fruit on a tablecloth. One of the baskets contains a pineapple, which would have been seriously expensive back then – such a show of wealth demonstrates how 'innocent' still-life arrangements can be used for storytelling.

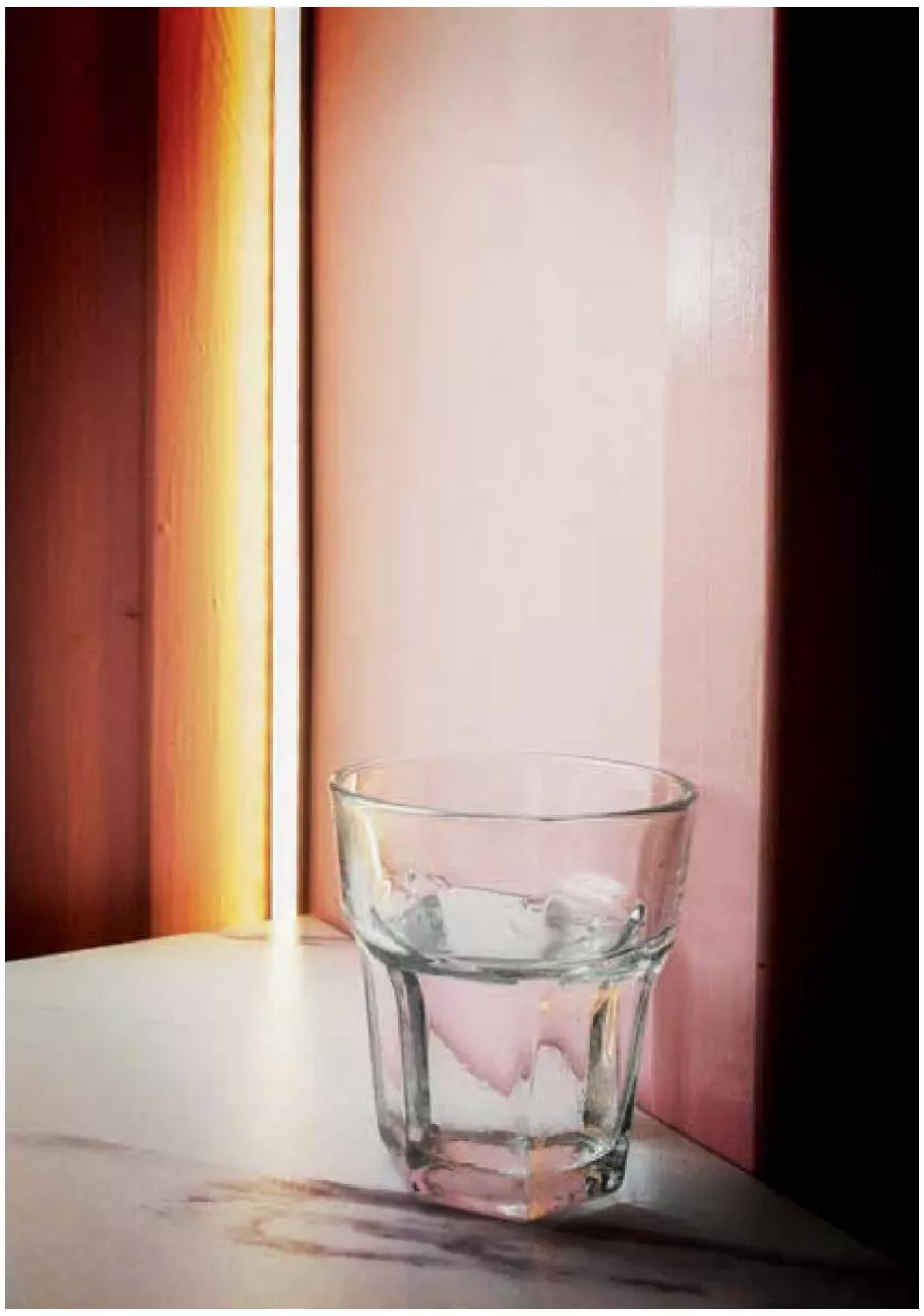
For me, a still-life photograph begins with the right light. As someone who loves to observe how light changes in my house throughout the day, I have identified my favourite rooms or, more accurately, my favourite corners. For an hour or so on a summer's morning a beautiful shaft of light filters through the kitchen window and hits the table there. It's here in this harsh, angular light that I like to place a carefully selected object or vase of flowers. Glass works particularly well, throwing reflections across the wood. I will spend a fair amount of time turning and moving an object, constantly observing and tweaking. I will consider the story I'm trying to tell, what I'm aiming to bring

> **'Think about how the objects relate to one another and how they work in the space that surrounds them'**

out and what I'm hoping to play down. Still life can be an exercise in restraint and extraction.

The objects you choose to photograph don't have to be exciting – sometimes it's the relationship between elements in the frame that make the composition sing. In fact, it can be rewarding to group everyday objects such as cutlery, pots and pans or stationery. When you're overly familiar with an object, choosing it for a still life can be a great way of seeing it anew – maybe as a mix of shapes, colours or textures – rather than becoming fixated on its function. If you have a variety of objects, it can help to think of one as the star or 'hero' and arrange other elements as supporting cast members. Think about how the objects relate to one another and how they work in the space that surrounds them. Despite the name, 'negative space' can be a powerful part of the composition – a place of energy and possibility.

Don't let the backdrop be an afterthought – it plays a huge role in the success of your still life. Make sure it relates to the subject through tone, colour, mood, texture or theme. Think surfaces with peeling paint, rust, bark, plain fabric or handmade paper. Crucially, the background should never be distracting; it's there to add to the story, not muddy the message. Clear some space in the diary for a trip to the car boot sale and clear some space on the shelves for the things you will inevitably bring back!



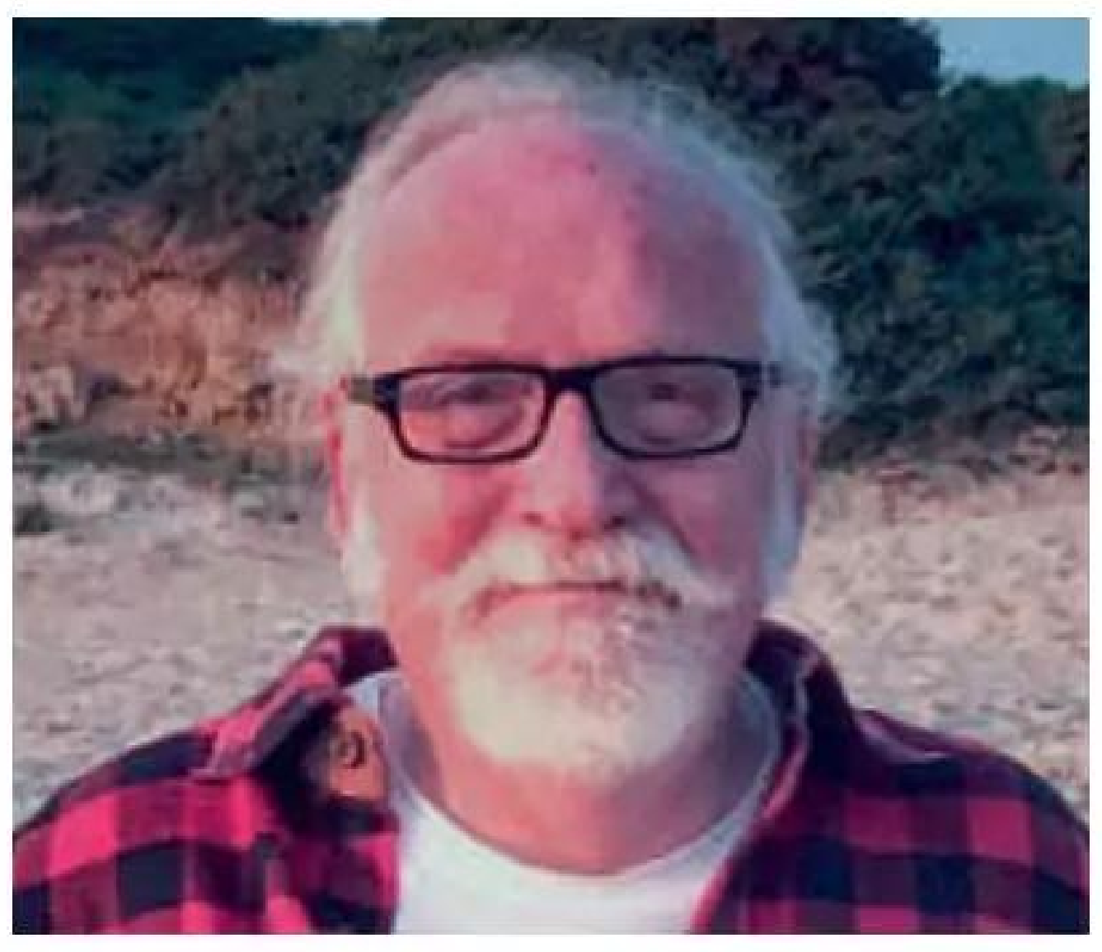
Tracy's top tips

● Spend time observing the light. Walk around your house and make a note of any interesting light – where does it occur? How does it change throughout the day? Where could you set up a still life?

● Don't be too neat. While it's true that everything in your still life needs to add to the story, it doesn't mean that everything needs to be sterile and neat. Try scattering crumbs about, allow petals to fall, let some paint peel off.

● Keep your eyes open. Not every still life has to be staged – sometimes arrangements can be stumbled upon. Stay alert to new opportunities and you will be rewarded.

These colourful pears from Tim's garden work wonderfully against his green fence



Tim Clinch

Tim Clinch is an award-winning professional photographer with more than 40 years' experience. Over the years, Tim has worked in most areas of the profession, has had his work published in magazines worldwide, and has had more than 30 books published featuring subjects as varied as interiors, travel, food and portraits. To see more of Tim's work, visit **timclinchphotography.com**

According to Tim Clinch, a studio is a state of mind rather than a specific place. 'People think you need a dedicated space full of equipment, but for most of my life as a photographer my studio has been in the back of my car,' he explains, revealing that he never travels anywhere without a three-metre length of black velvet. 'You can stand anybody in front of it and it just works,' he laughs. 'There's no need to overcomplicate things: if you want to hang a background you can use proper stands and clamps or you can stick it against the side of a van!'

Tim believes there are two big mistakes people make when they're thinking about studios: firstly, they think that a studio has to be somewhere and secondly, they set up a still life and then pick up the camera. 'You might find that you've positioned the arrangement too low and then you will end up on your knees!' he smiles. 'You might also find that the light is no good. Think about the light, set up the subject and then pick up the camera.'

Early influences

Tim cites *The Taste of France* by Robert Freson as one of his early influences. 'It's hard to believe, but back then food wasn't groovy,' he explains. 'My favourite photographer in the world is Irving Penn and Bob ran his studio for 15 years.' When Freson came to

Three old bottles Tim found in his cellar in Bulgaria, grouped perfectly

PICTURES ON THESE TWO PAGES © TIM CLINCH

London, Tim was lucky enough to assist him and was blown away by the fact that he was using 35mm. 'You didn't shoot on 35mm back then, you shot on Hasselblad or large format,' he says. 'Bob turned up with his Nikon and broke the mould.' The images Freson produced show food in its natural state, burnt bits and all. 'I'm a big fan of people who change things, like Bob and Jimi Hendrix,' laughs Tim.

Another book that gets Tim's juices flowing is *Worlds in a Small Room* by Irving Penn. 'There are videos of Penn working and he's using a tent with a roof that acts like a diffuser,' he explains. When he was shooting on location, Penn was a big fan of natural light – particularly top three-quarters – and it's a preference Tim shares.

Reflected glory

While Tim rarely uses flash, he does occasionally use continuous lighting, and reflectors. 'I don't use flash often, but I get annoyed with people who say, "Oh, I don't use flash," when what they really mean is, "I have no idea how to use it!"' he remarks. While he might favour natural daylight, he is quick to point out that you still need to know how to use it. 'People don't study lighting enough,' he says. 'Look at Rembrandt, look at Vermeer, then you will see what lighting is.' These days, Tim fears that people have become too reliant on digital technology to solve their problems when this should be the role of the photographer. One of the ways to overcome this is to shoot subjects that you find challenging, or maybe even dislike. 'Being a photographer means solving problems and the only way to solve problems is to take pictures you don't want to take – that's when you learn,' he says. 'Taking pictures of things you like is fun, but you're not going to learn anything from it and you're not going to improve as a photographer.'

One of the things Tim has learnt over the years is that you often spend more time taking things out of pictures than putting them in – especially when it comes to still life. But this restraint hasn't stopped him from accumulating props. 'You just have to have an eye and never, ever discount something as being too knackered,' he urges. 'If you want a nice background to lay some cutlery on, go and find your largest frying pan, turn it over and use the bottom!'

Backgrounds play an important part in still-life photography, but Tim stresses that you should never let them overshadow the subject. 'Don't let your photograph become a picture of a background,' he says. 'It's like a painter showing someone a picture, then hearing them say, "Oh, what a lovely frame."'

Roses shot in a Provençal Chateau for *House and Garden* magazine

Tim's top tips

- Study still-life painters. 'Stop looking at photographers on Instagram and start looking at painters like Giorgio Morandi.'

- Make the most of one object. 'Put a stick on a black background, or get a fork or a spoon, put it in a plate of stew, eat the stew and photograph it dirty.'

- Consider backgrounds. 'I started painting my own backgrounds after some French linen I had been collecting became stained when the pipes burst in my barn,' recalls Tim. 'I looked at the linen and thought, hell, that looks so nice, and that's how it started.'

An old chopping board makes the perfect backdrop for this zigzag corkscrew

© BARBARA WADE

John Wade
Regular AP contributor John is a freelance writer and photographer who has written for photographic magazines in the UK, America and Australia. He has also written, edited and contributed to more than 30 books on photographic history and techniques. Find him at **www.johnwade.org**

Rewind to film

New to film or wish to take a trip down memory lane? **John Wade** explains all you need to know

How many and what kind of exposure modes does your camera have? Program, shutter priority, aperture priority and manual; portraits, sport, landscapes, night and macro photography… maybe even more? What about metering? Does your camera offer average, spot, centre-weighted, matrix, multi-segment? How about autofocus? Single, continuous, automatic, manual, hybrid, dynamic? Can you change the sensitivity from shot to shot or have it automatically changed for you? Now imagine you have none of these aids. Welcome to the world of second-hand manual film cameras.

Using a second-hand film camera is a great way to learn, or relearn, the fundamentals that newer photographers have never needed to know, or others who have been around a few years more might have forgotten. Using a manual film camera with no automatic functions can be daunting but exhilarating at the same time. So let's go back to basics.

Film

The most popular film types readily available today are 35mm and 120 roll film. There are three types: mono negative for black & white prints, colour negative for colour prints and also colour reversal for colour slides or transparencies. The two speeds that have endured are ISO 200 and ISO 400. On older cameras, the setting might be designated in ASA rather than ISO. But don't worry, the numbers refer to the same speeds.

16
27
FUJI RFP
28
FUJI
27
27A
28

MANUAL FILM CAMERAS

Here are five types of manual film cameras to consider

35mm single lens reflex

Takes 35mm film in standard cassettes. Reflex viewing system ensures viewfinder previews scene directly through the lens. Most have split-image rangefinders in their viewfinders. Built-in meters match a needle to an index mark while juggling shutter and apertures.

35mm coupled rangefinder

Takes 35mm film in standard cassettes. The viewfinder is separate from the camera lens, leading to parallax problems at close-focusing distances. The viewfinder contains a rangefinder that is linked to the focusing control for accurate distance measurement.

ALL PICTURES © JOHN WADE

RFP
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FUJI RFP
28A
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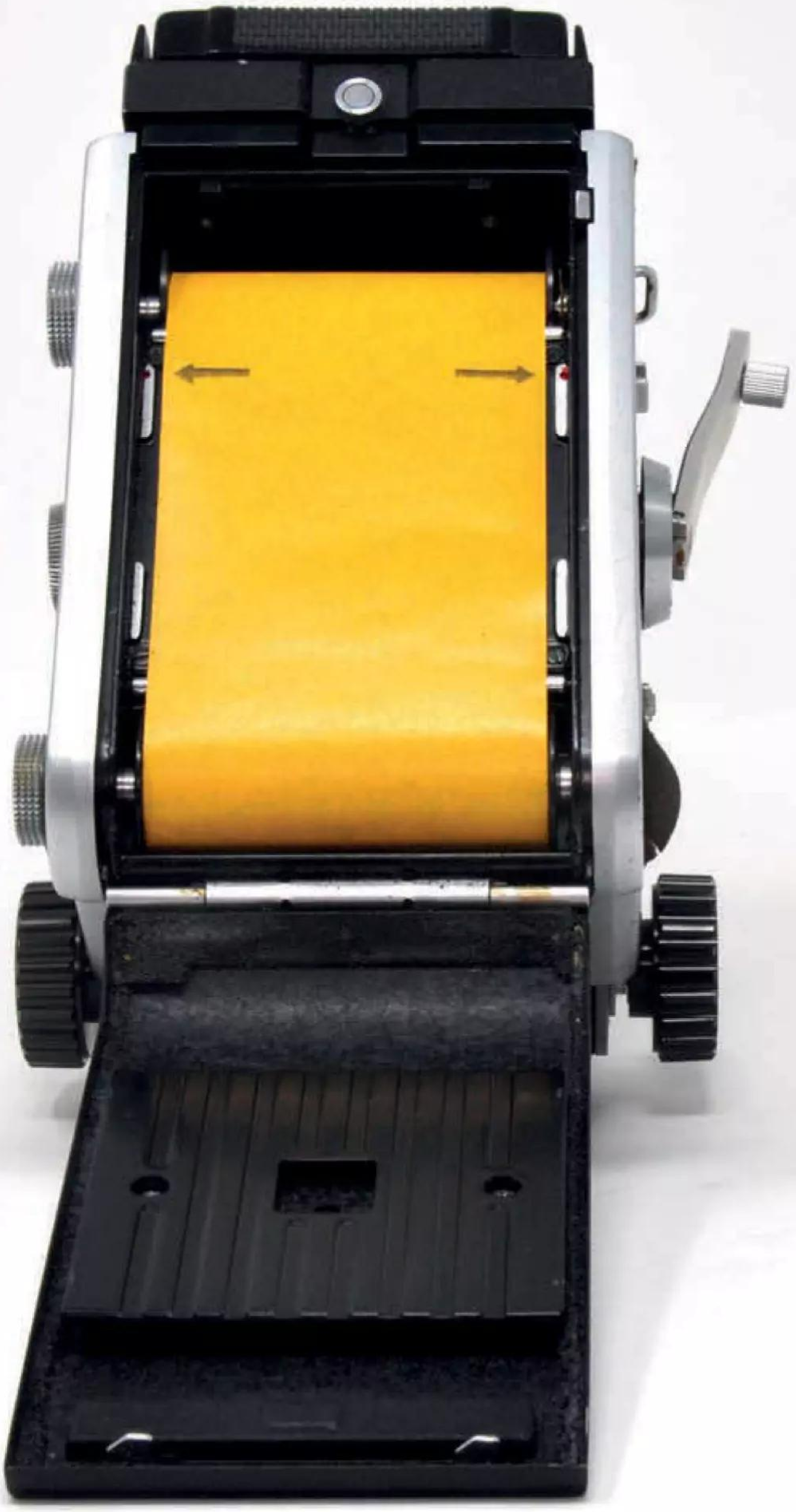
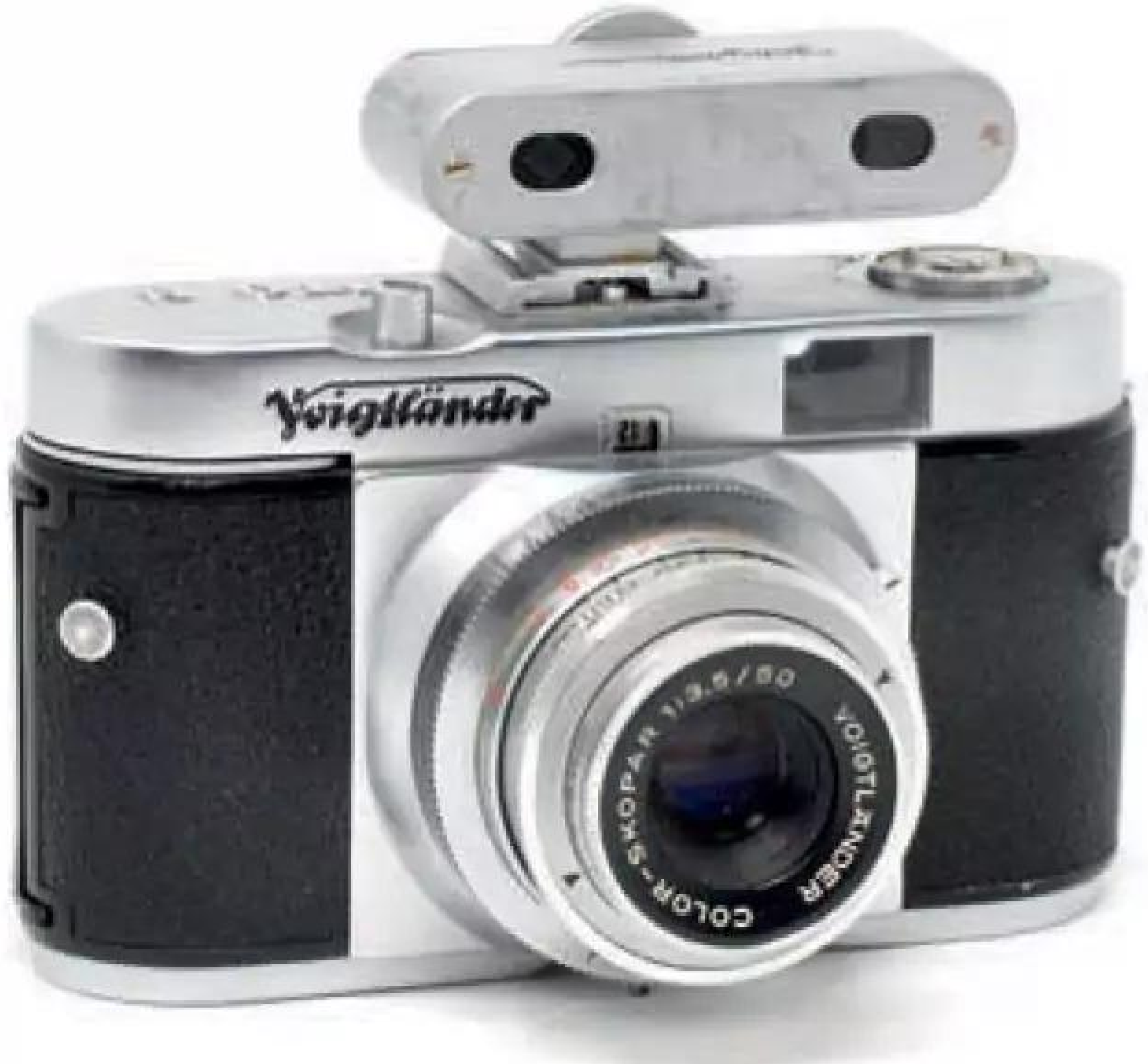
29A



Above: A standard lens gives a natural view similar to that of the human eye
50mm lens on a Leica M3 35mm rangefinder camera

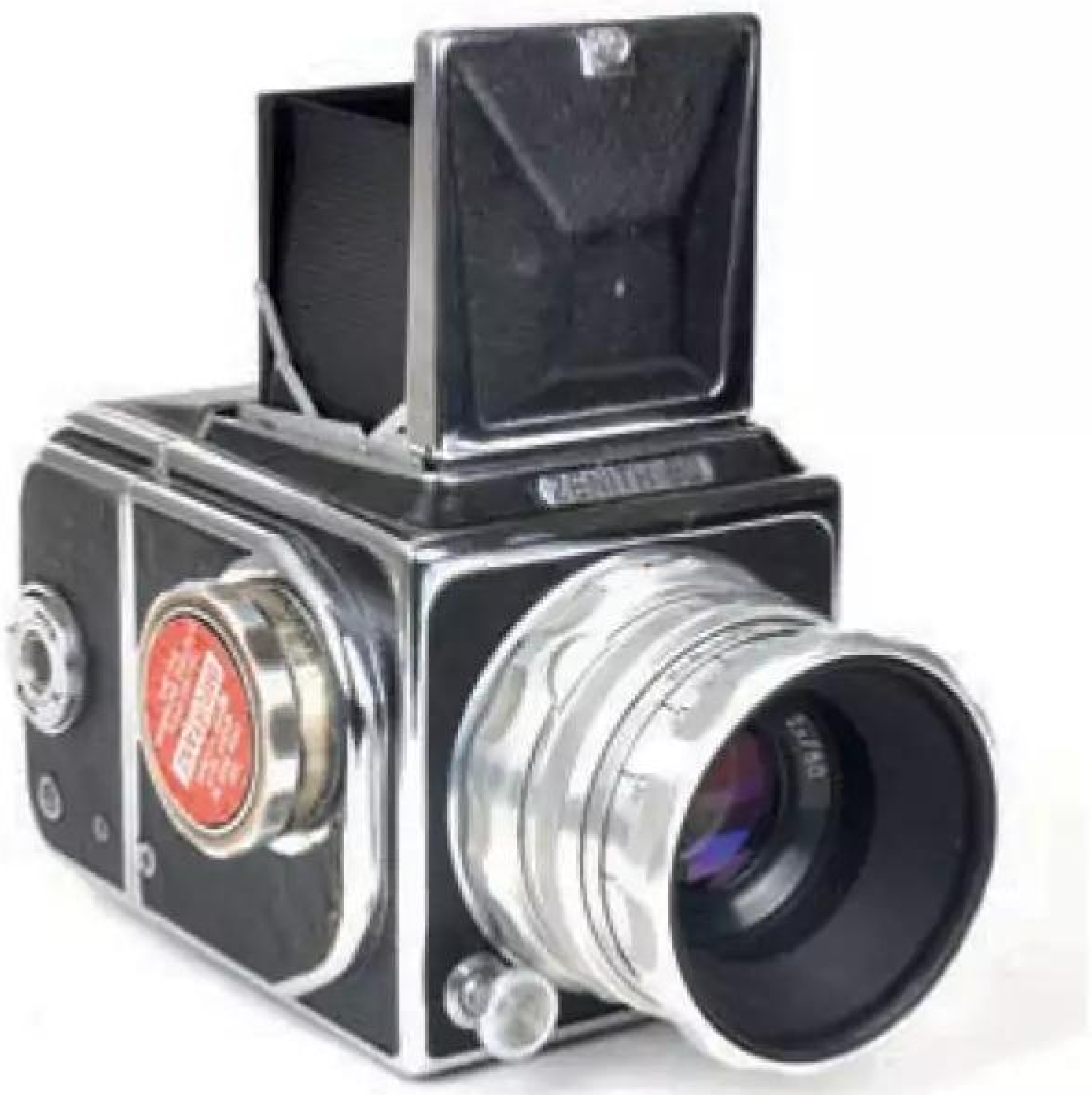
Left: Bracketing exposures helps to attain the best result

Right: Roll film is wound from its original spool to an empty one, where it remains until processed



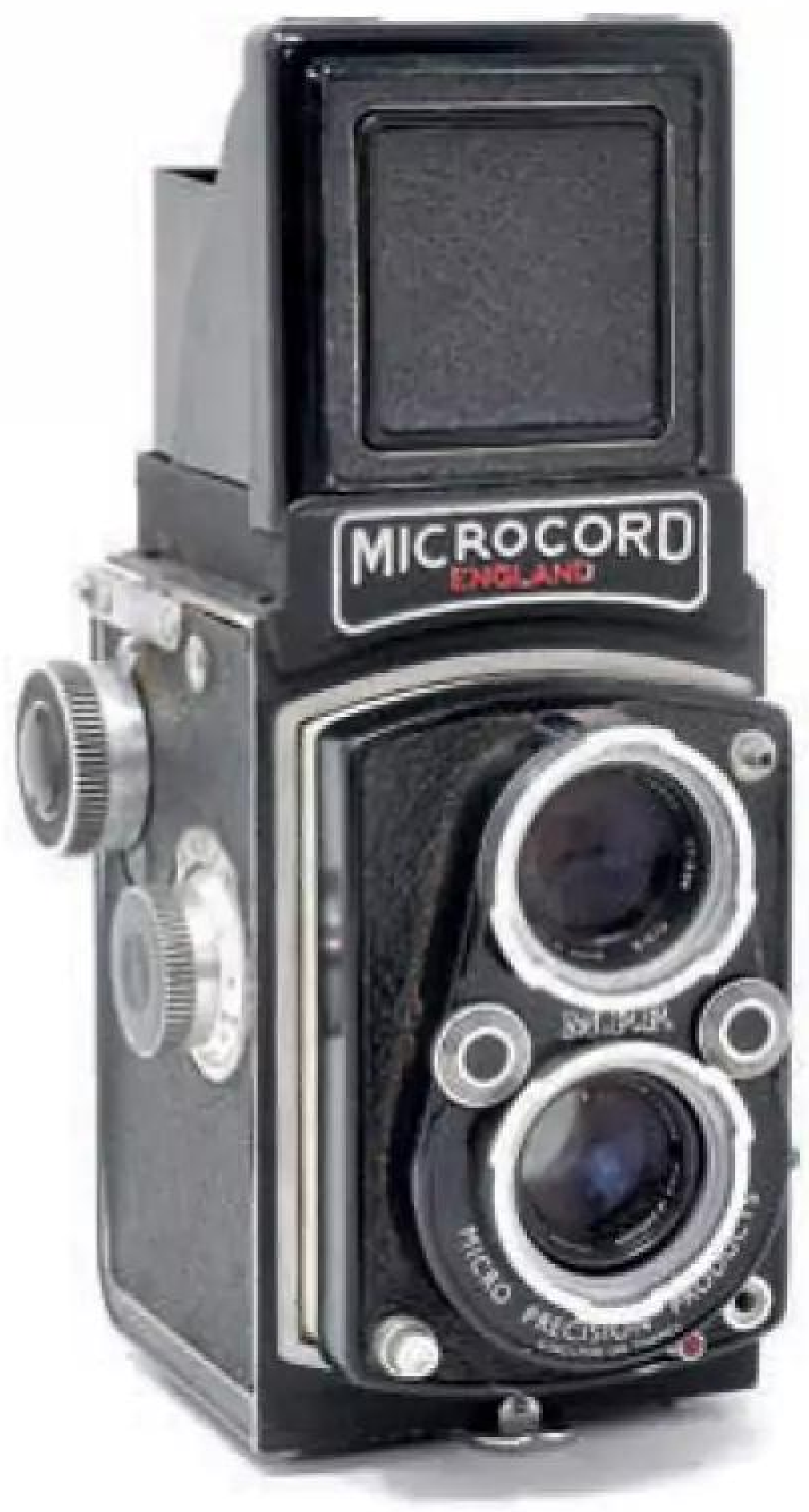
35mm viewfinder

Takes 35mm film. Similar in operation to a coupled rangefinder camera, but without the benefit of said rangefinder. Camera-to-subject distance must therefore be measured or estimated manually or with a separate add-on rangefinder.



Roll film reflex

Takes 120 roll film to produce images that range from 6x4.5cm to 6x9cm. Similar method of use to a 35mm SLR, but on a larger scale. Meters not always built in but can often be added via an interchangeable viewfinder accessory.



Twin lens reflex

Takes 120 roll film to produce a variety of image sizes, the most popular being 6x6cm. Uses two lenses that focus in tandem. One records its image on the film, the other reflects its image up to a large focusing screen on top of the body.

© ANGMOKO VIA WIKIMEDIA COMMONS

A fast 1/1000sec shutter speed freezes the action

Shutter speeds and movement

A slow 1/15sec blurs the background as the camera is panned to follow the subject

FAST shutter speeds freeze action. Slow speeds blur action. Used carelessly, the wrong shutter speed can ruin a picture that shows movement. Used creatively, blur adds atmosphere.

Shutter speeds compensate for camera shake when using a film camera without image stabilisation. The longer the lens, the faster the speed needed when handheld. A general rule is to use the one closest to the reciprocal of the focal length of the lens: a 50mm lens requires 1/50sec (or nearest 1/60sec equivalent), a 250mm lens requires 1/250 second, a 500mm lens requires 1/500sec… and so on.

Lens apertures

The aperture control is usually found on a ring around the lens barrel. It comprises a circular iris that can be opened wide or closed down to a small gap to control the amount of light allowed through the lens. Apertures are designated in f-stops – the result of dividing the diameter of the aperture into the focal length of the lens. The higher the number, the smaller the aperture.

Shutter speeds

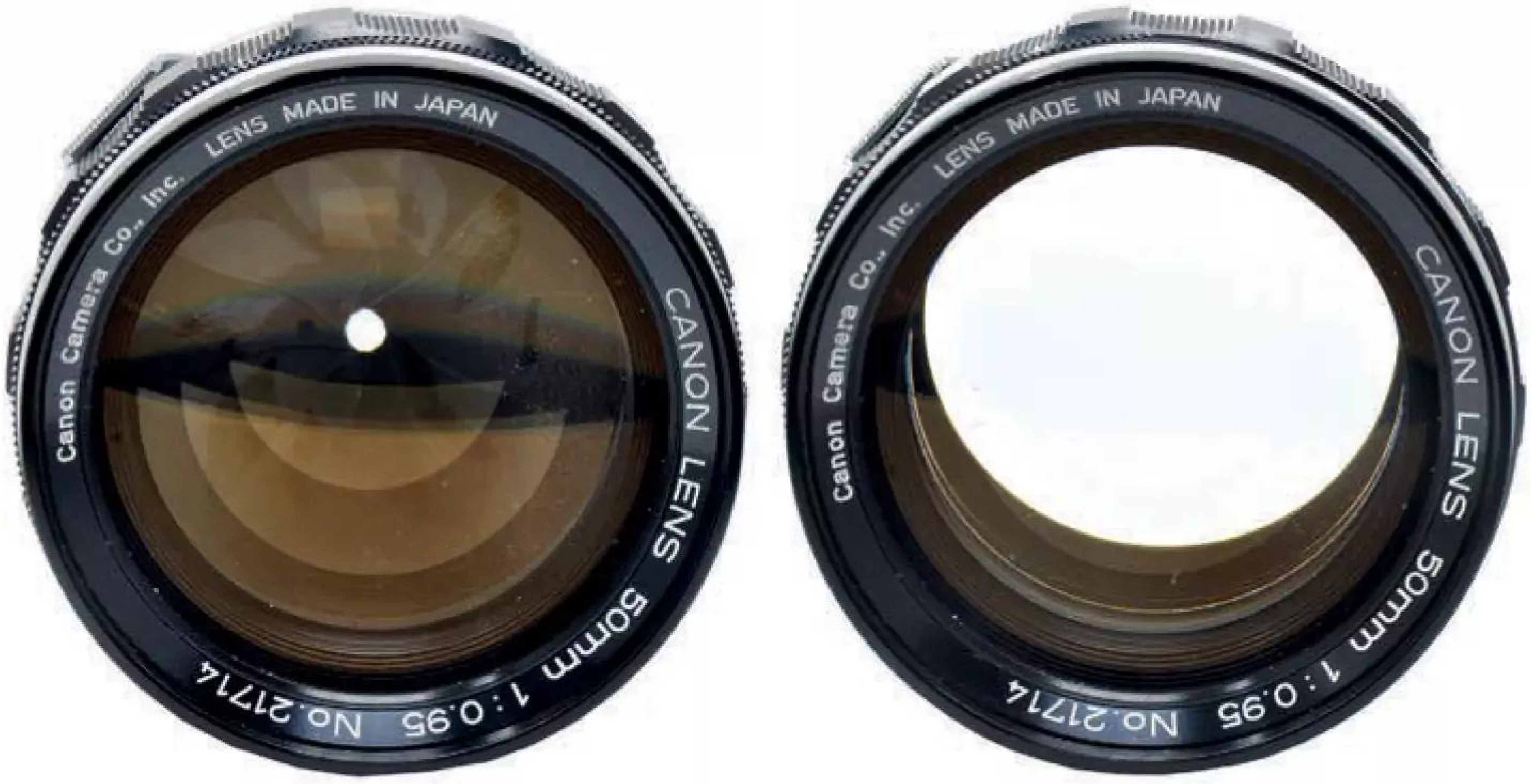
Shutter speeds are often found on a dial, usually on the top of a 35mm camera, more often on the side of a roll film camera, and sometimes on a ring around the lens on either. The dial or ring controls either an iris that opens and closes behind the lens or, most usually in a single lens reflex, two blinds that follow each other across the focal plane in front of the film. In this way they manage the time that light is allowed through the lens and are designated in fractions of a second. The smaller the fraction, the faster the speed.

Exposure

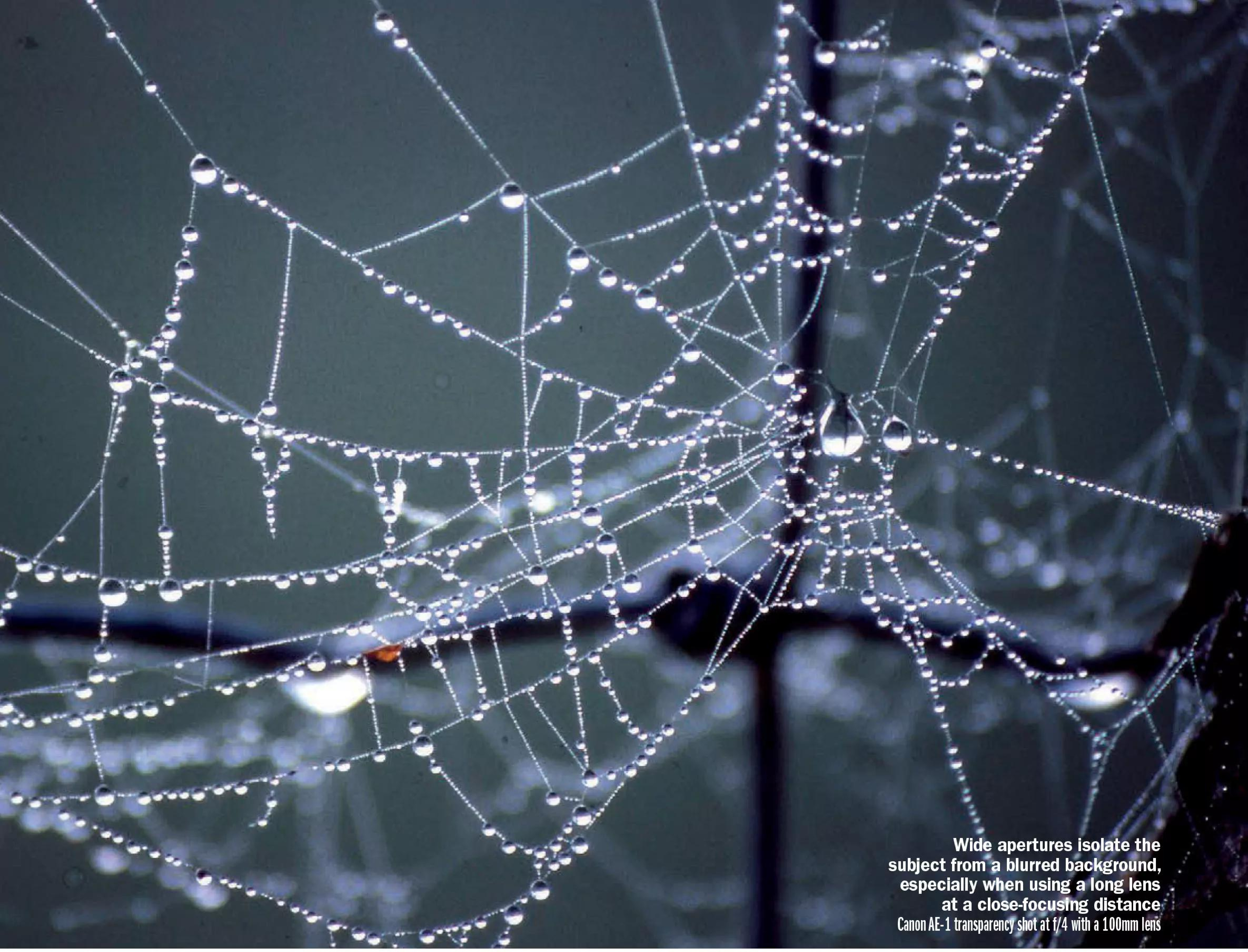
The earliest cameras with built-in exposure meters were around as early as the mid-1930s, so let's allow ourselves a meter on our otherwise manual film camera. The meter measures the intensity of the light falling on the subject and translates that into a suggested exposure setting.

However many exposure modes a modern camera has, they mostly boil down to the use of apertures and shutter speeds. Each setting on the aperture or shutter speed scale is half or double its neighbour. So it's possible to set a whole range of different combinations which, in effect, give the same exposure for the light on hand.

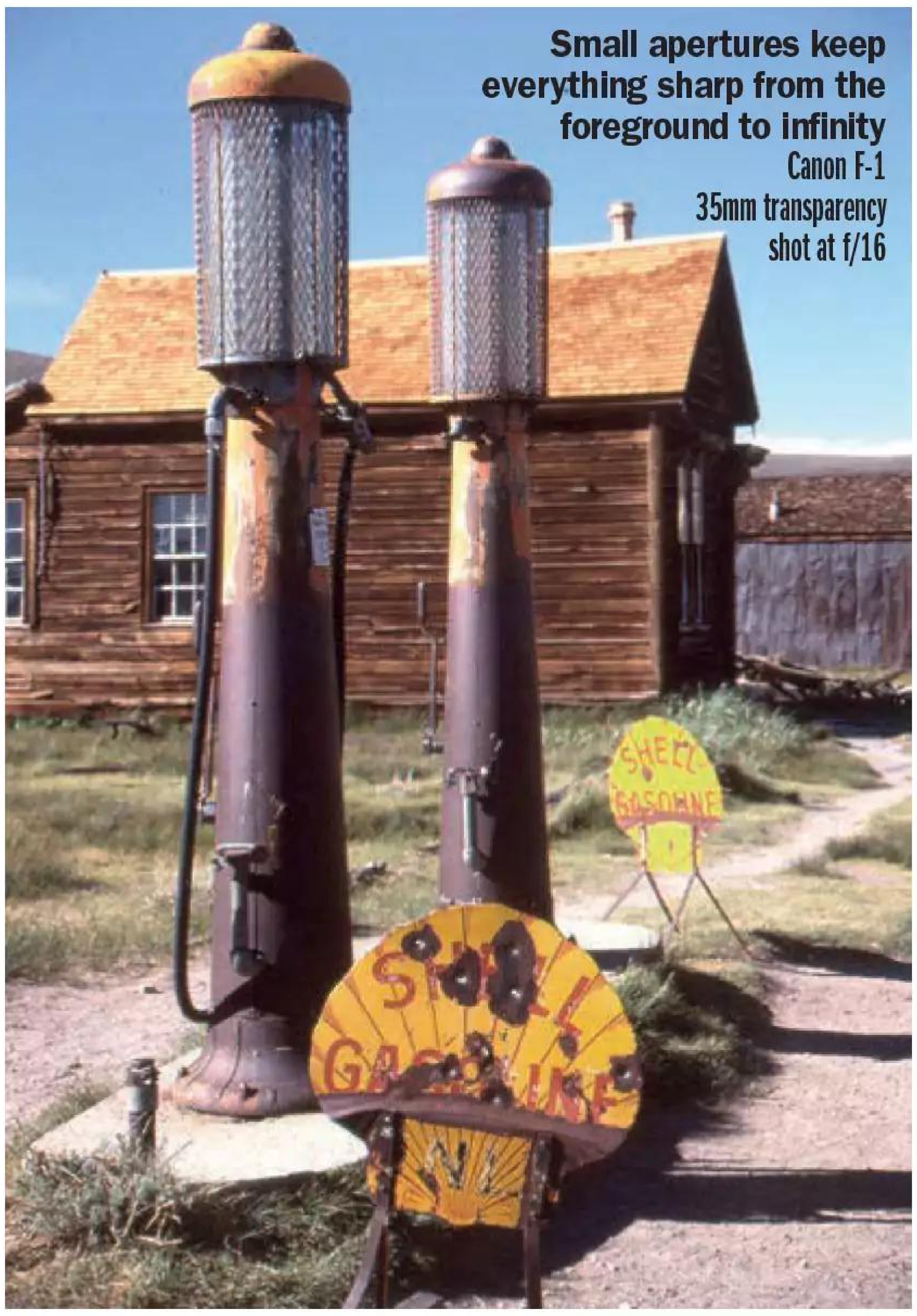
For example, 1/125sec at f/11 gives the same exposure as 1/250sec at f/8, because as the shutter speed was halved, the amount of light through the aperture was doubled. Likewise, that same 1/125sec



Apertures: Canon 35mm rangefinder camera lens set at f/16 (left) and wide open at f/0.95 (right)



Wide apertures isolate the subject from a blurred background, especially when using a long lens at a close-focusing distance
Canon AE-1 transparency shot at f/4 with a 100mm lens

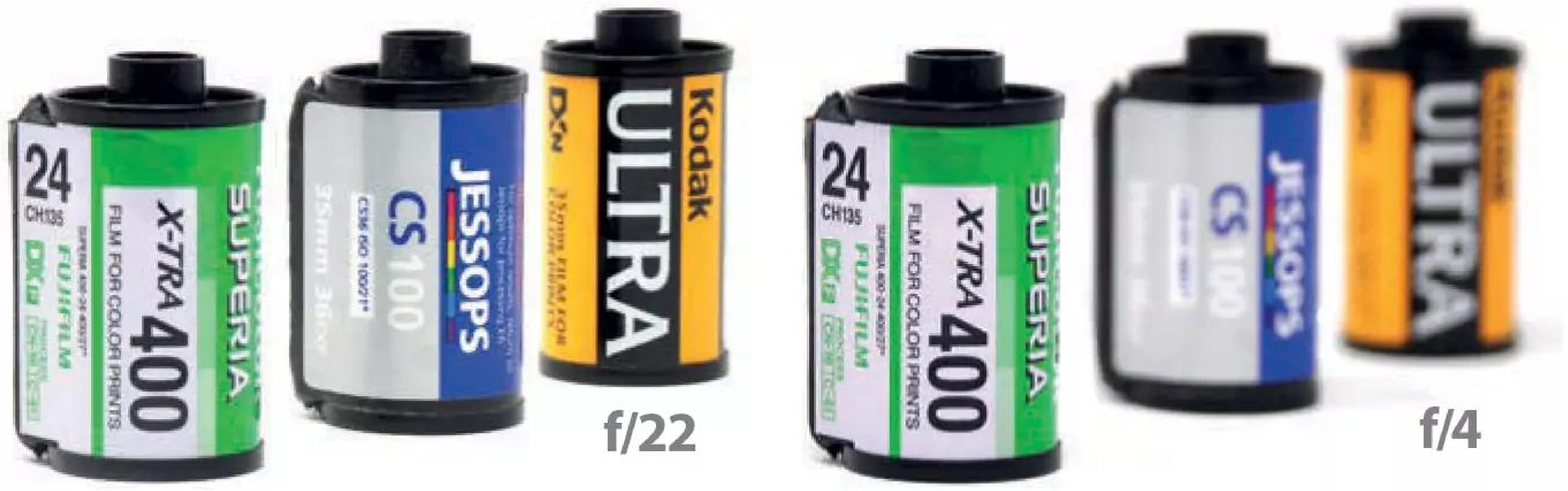


Small apertures keep everything sharp from the foreground to infinity
Canon F-1
35mm transparency
shot at f/16

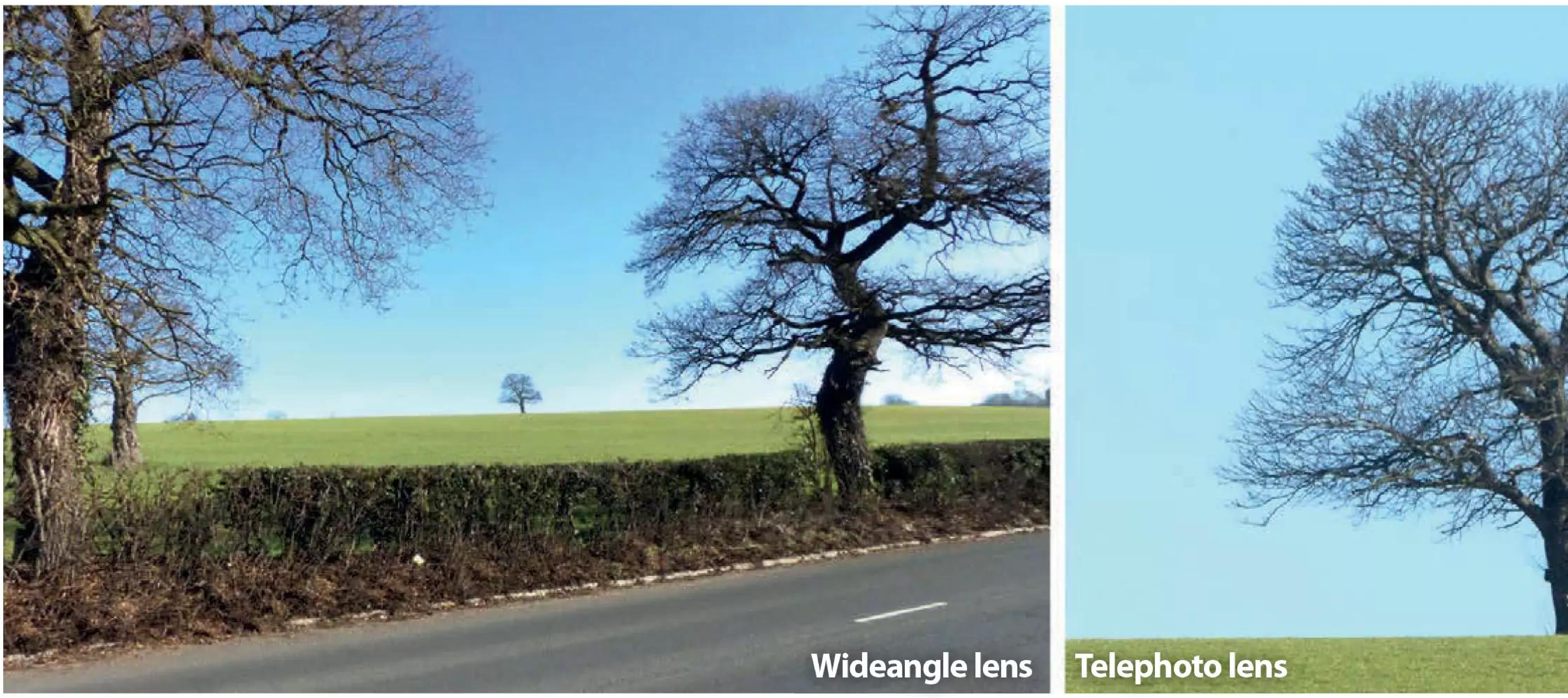
Apertures and depth of field

DEPTH of field is the zone of acceptable sharpness in front of and behind the point where the lens is actually focused. Wide apertures, coupled with fast shutter speeds, give a shallow depth of field, suitable for portraiture where you want to isolate a sharp subject against a blurred background. Small apertures, coupled with slower shutter speeds, give a deep depth of field, best for landscapes where you need everything sharp from the foreground to infinity.

Camera-to-subject distance is also a factor: the closer you shoot, the narrower the depth of field, so use a small aperture with slow shutter speeds when shooting close-ups. Telephoto lenses appear to constrict depth of field because, as far subjects are seemingly brought closer to the camera they bring their apparent depth of field with them; the reverse is true of wideangle lenses.



Depth of field is especially important when shooting close to the subject. The left-hand picture (above) was shot at f/22, the right-hand one at f/4



Shot from the same camera position, the extreme effects of using a 28mm wideangle (left) and 500mm telephoto (right) lens on a 35mm format

at f/11 is equivalent to 1/60sec at f/22… and so on.

A correctly exposed picture will show a good range of tones or colours. An underexposed picture will be darker and lose detail, especially in the shadow areas. An overexposed picture will be lighter and lose detail in the highlights. When using a film camera it's a good idea to bracket exposures: shooting one at the correct exposure, another at one shutter speed or aperture setting less, and a third at one setting more.

As well as exposure, apertures affect certain aspects of focus, so if you are giving precedence to the aperture for a particular effect, you compensate with an appropriate shutter speed. Shutter speeds control aspects such as the way action is recorded, and so need to be compensated for by the use of appropriate apertures.

Focal lengths and formats

Put simply, the focal length of a lens is the distance between the film and the centre of a lens when it is focused at infinity. The focal length of a standard lens is approximately equal to the diagonal measurement across the format it serves. For a 35mm negative that's a little over 43mm, which most camera manufacturers round up to 50mm. Apply the same thinking to a medium-format roll film image measuring 6x6cm and you get a standard lens of around 85mm, or more like 108mm on a 6x9cm format. Each of those three lenses, when used with its appropriate format, gives a similar view of the subject.

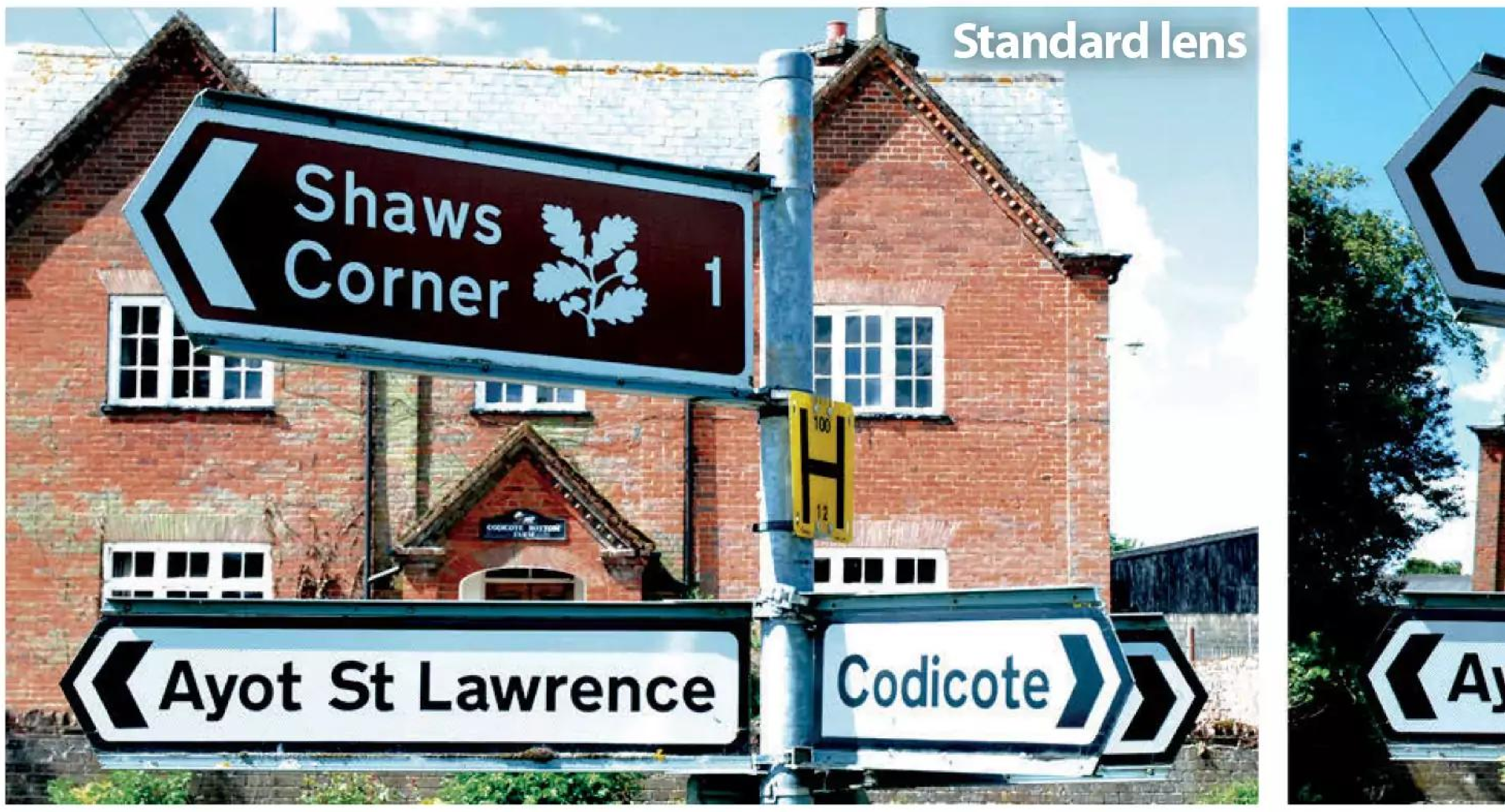
Whether we're talking about a prime lens (fixed focal length) or a zoom lens (variable focal lengths), the results on film are much the same: a standard focal length records the scene with an angle of view close to that of the human eye, so the picture looks natural. A telephoto lens with a longer focal length narrows the angle of view, so that far objects fill the frame more, and the longer the focal length, the more objects seem to move closer. A wideangle focal length opens up the field of view while seeming to push nearby objects further away from the camera. The shorter the focal length, the more the scene opens up.

Focus

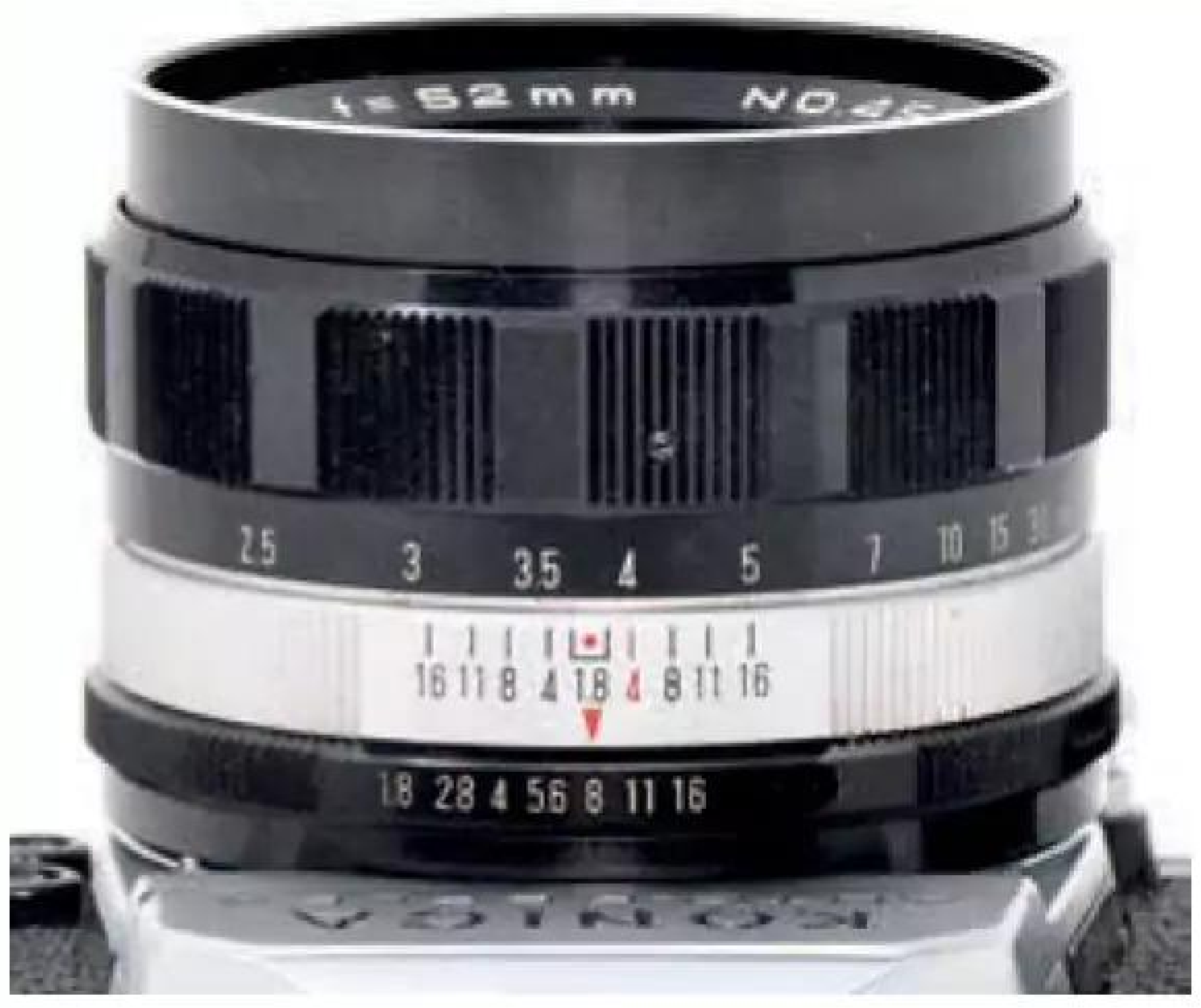
Without autofocus you need to make adjustments manually by turning a ring around the lens barrel, or by moving the lens itself backwards and forwards. Most good film cameras have one of two types of rangefinder incorporated into the viewfinder to help you do this. Always focus

Focal length and perspective

PERSPECTIVE – the apparent distance between foreground and background objects – appears narrower with distance. So if you are shooting with a telephoto lens to bring far objects closer, then you bring their perspective with them, and vice versa when shooting with wideangle lenses.

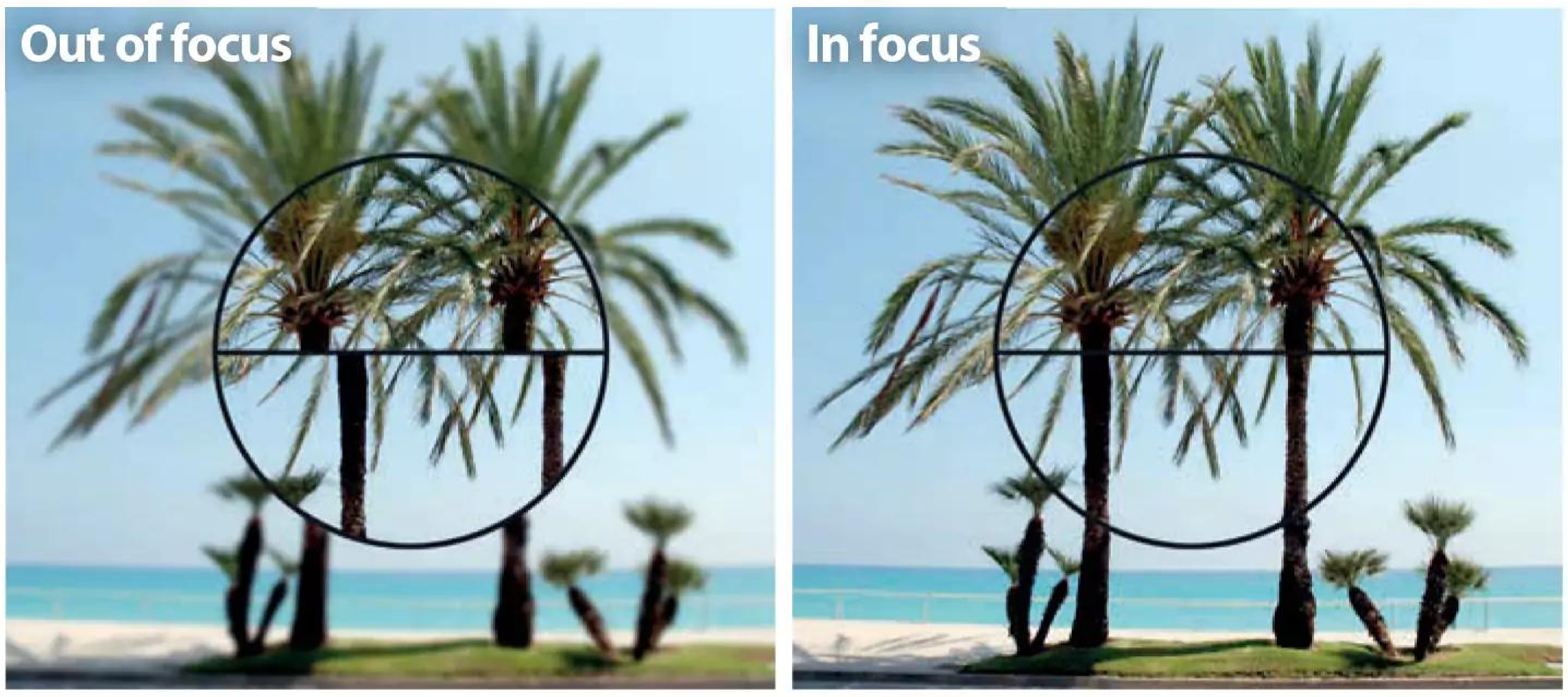


Left to right: Shot with a standard lens to give a natural effect; with a wideangle, moving the camera closer to keep the foreground the same, the background recedes; with a telephoto, moving the camera further away to keep the foreground the same, the background advances



The focusing ring is most often found around the barrel of the lens, set here between 3.5ft and 4ft (Konica Auto-Reflex 35mm SLR)

on the principal subject within the picture, and take special care when shooting close-ups, using longer lenses or setting wide apertures. All three of these factors, or a combination of any or all of them, make accurate focusing extra critical. AP



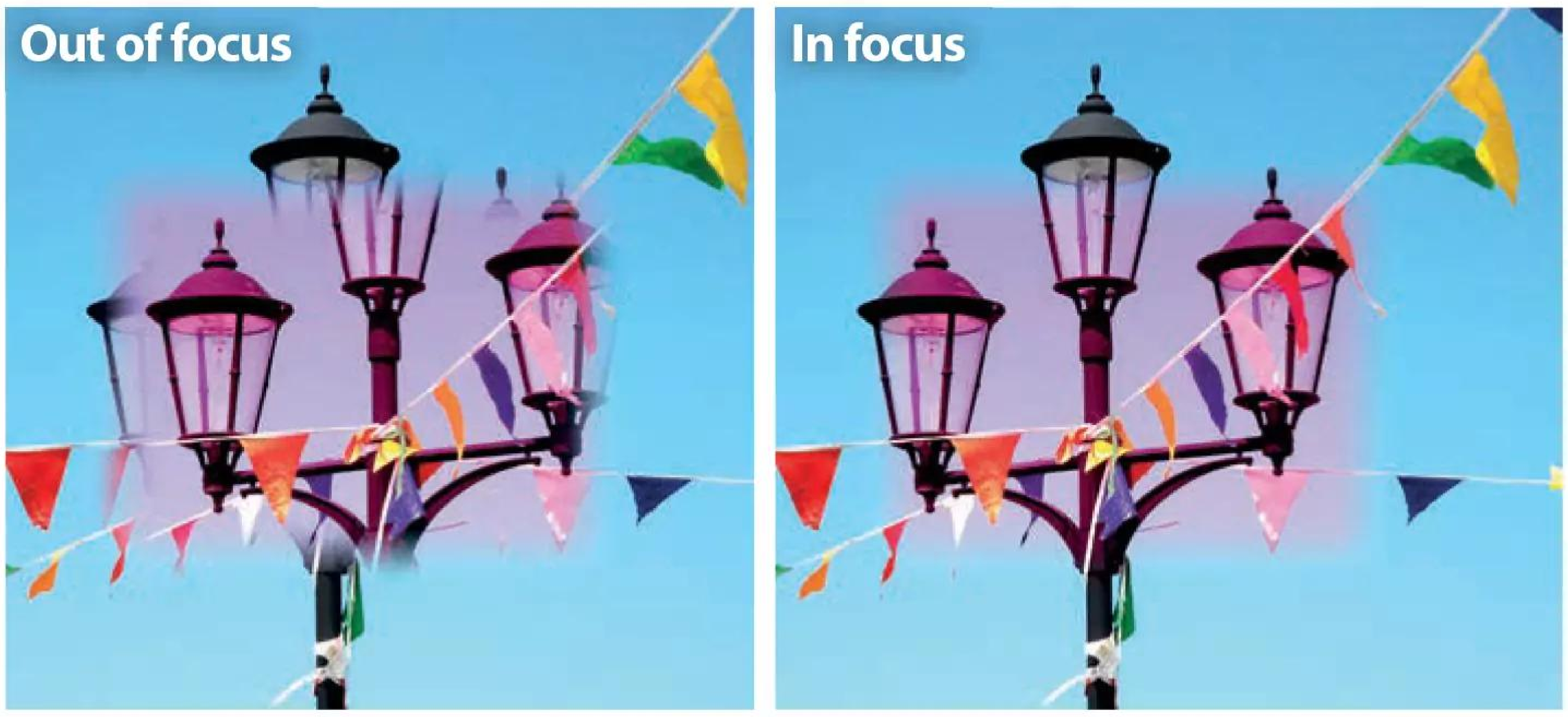
How a split-image rangefinder appears in the viewfinder: out of focus (left) and in focus (right)

Focusing with rangefinders

MANY film cameras have built-in rangefinders to measure subject distance. Sometimes they work independently from the lens so that the distance ascertained by the rangefinder needs to be set manually on the lens. Mostly, they are coupled so that focusing the lens operates the rangefinder to show when the subject is sharp.

There are two types. The first is a split image rangefinder, usually found in SLRs, which shows a central circular spot in which the image is split in two. Adjusting the lens brings the two halves together when the lens is correctly focused.

A coincident image rangefinder, often found in non-reflex cameras, shows a central rectangular portion out of alignment with the rest of the image. Adjusting the lens until the two images come into alignment sets the correct focus.



How a coincident-image rangefinder appears in the viewfinder: out of focus (left) and in focus (right)

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Telephoto lens
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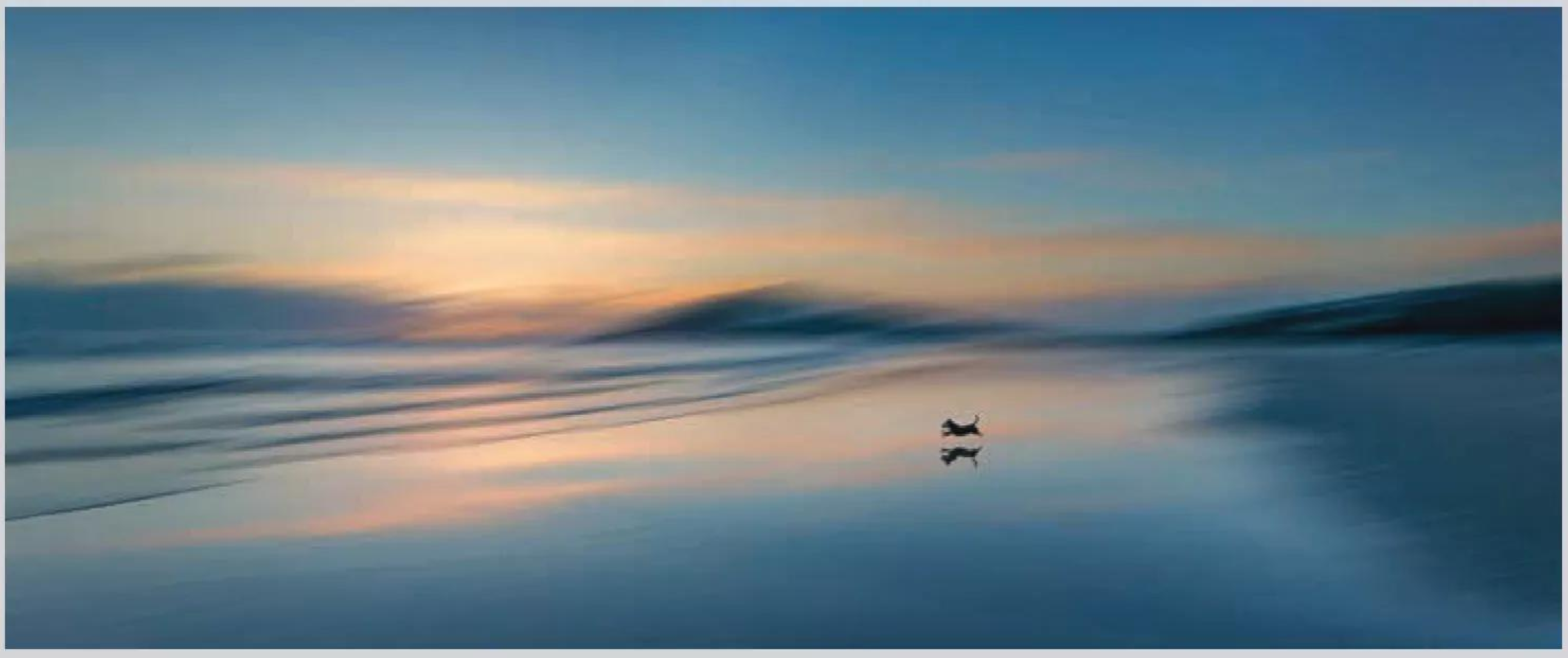

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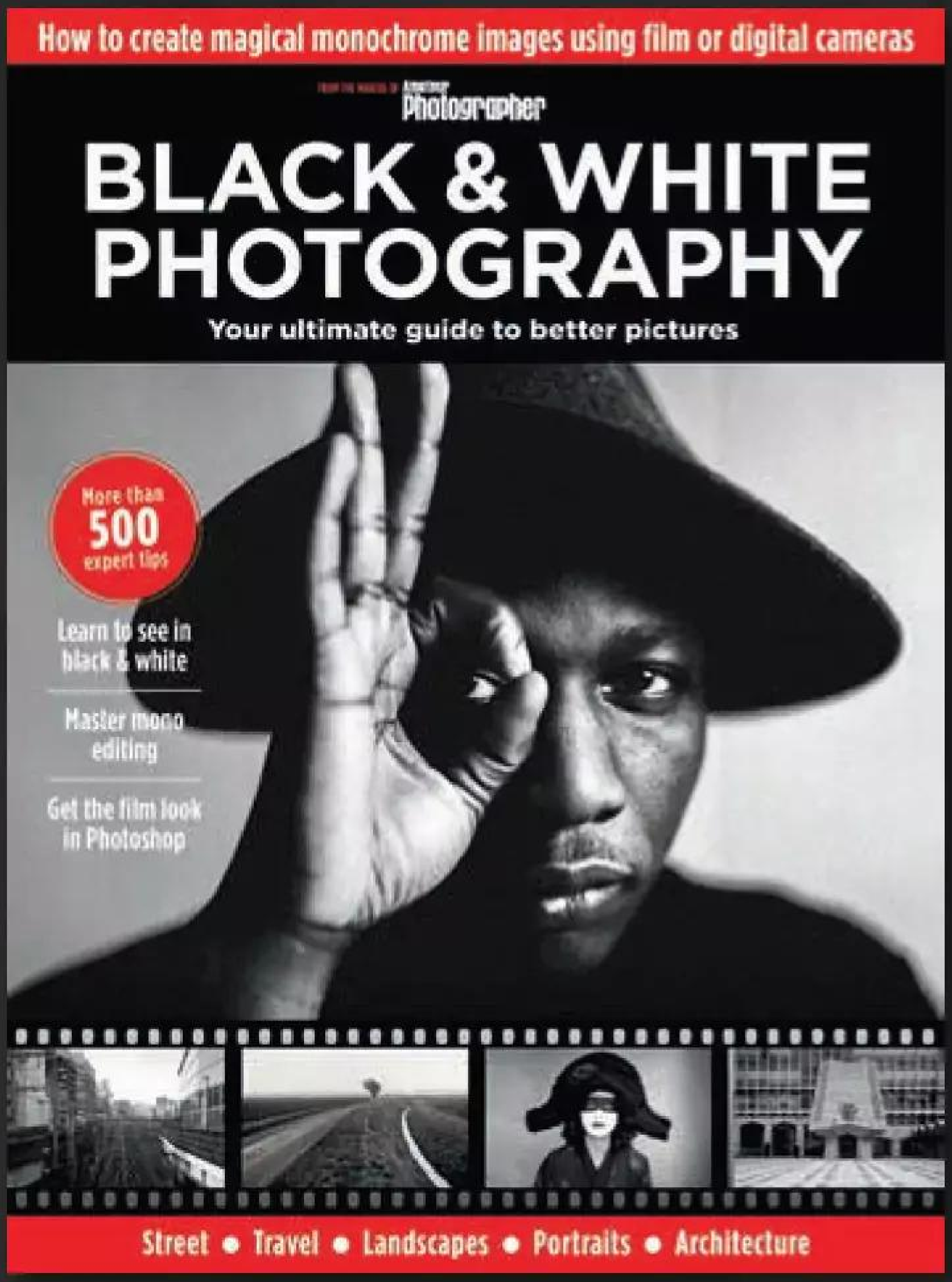
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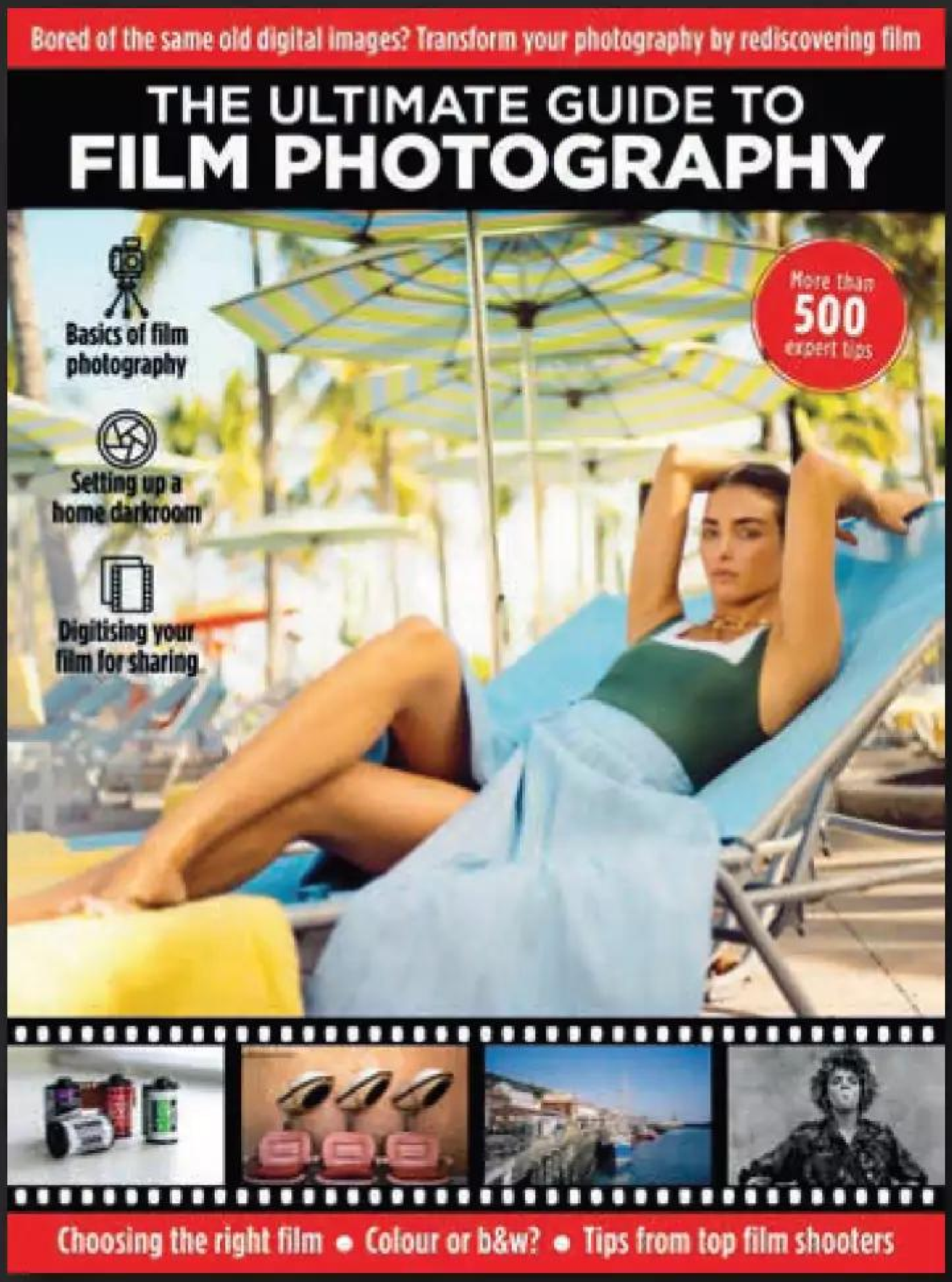
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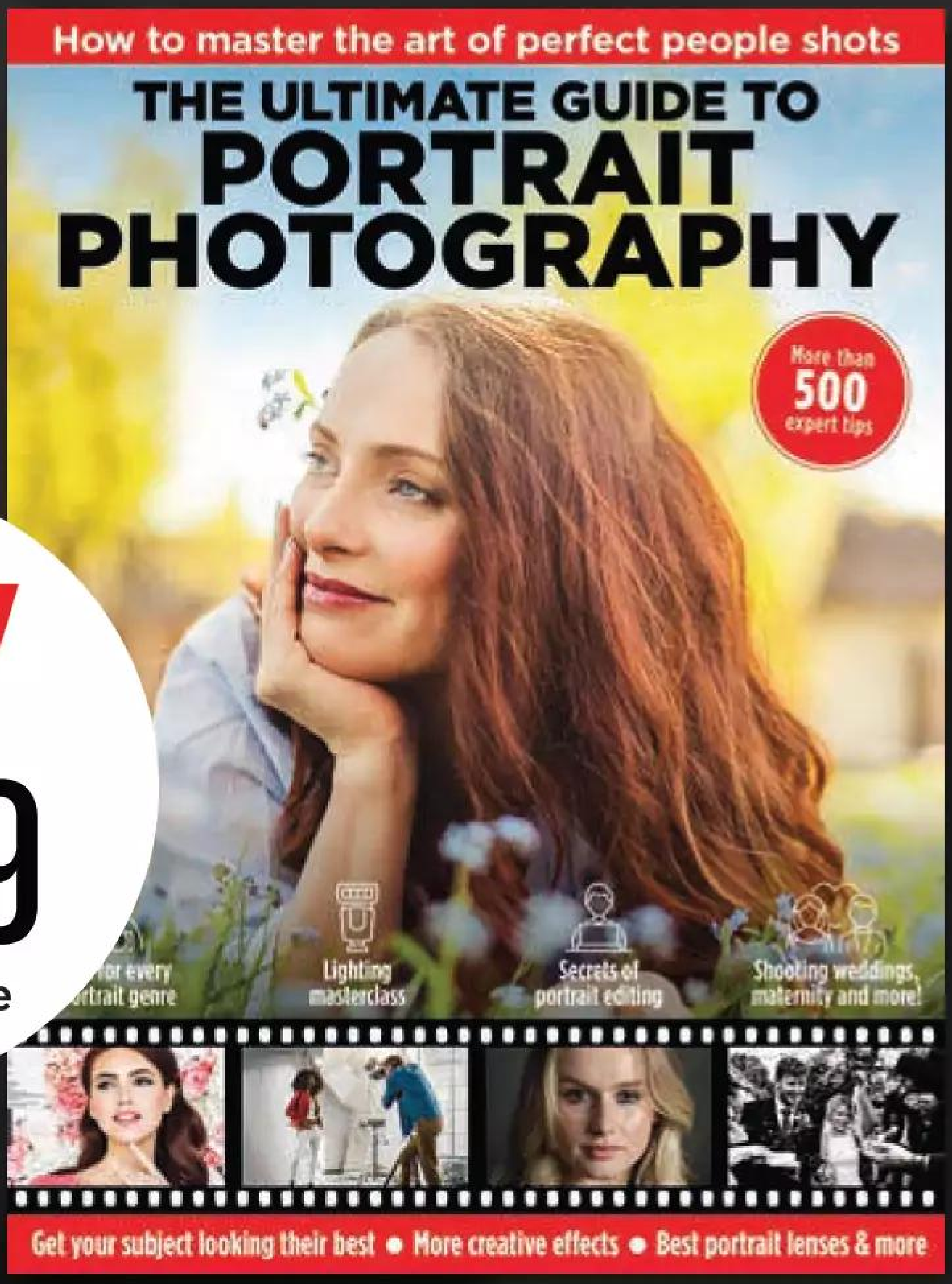
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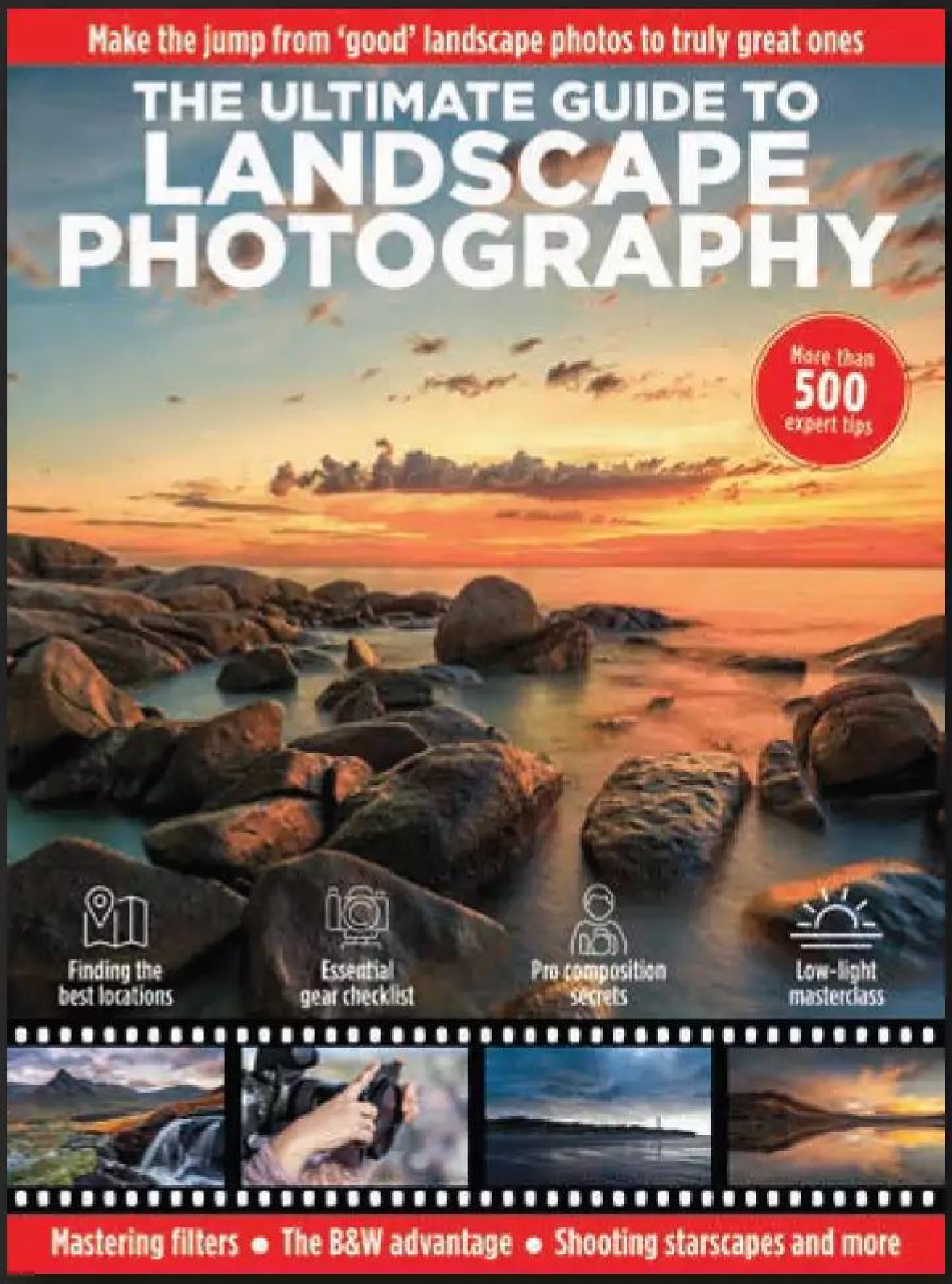
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